



# **MANAGEMENT CONTROL SYSTEM DESIGN AND DYSFUNCTIONAL BEHAVIORS IN ORGANIZATIONS**

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## ABSTRACT

*This dissertation examines how management control system design affects dysfunctional behaviors. It also analyses individual reactions to peers' dysfunctional behaviors. Dishonesty in performance reporting is analyzed as a key dysfunctional behavior in organizations. Specifically, it is analyzed two different dishonest behaviors: (i) dishonesty in performance reporting; and (ii) free riding.*

*In order to examine these issues, I performed three experimental studies. Since management control systems are not effective in the same extent in all individuals, the first experimental study analyzes how management control system design (beliefs system vs. boundary system) affects the honesty in performance reporting taking into account the individual cognitive orientation (individualism-collectivism). Results of this study show that individuals with a predominant individualist cognitive orientation were more dishonest when they reported their results. Results also show that individualists were more dishonest under a boundary system than under a beliefs system.*

*The second study focuses on examining how relative performance feedback (RPF) affects individual performance when individuals are rewarded by a team performance-based system. Specifically, this study analyzes the effects of RPF when it provides information about team members (intra-group RPF) or about several teams (inter-group RPF). Results show that intra-group RPF has a negative effect on individual performance. Results also show that inter-group RPF mitigates this negative effect.*

*The third study analyzes the effects of individuals' fairness perception and inter-group RPF on whistleblowing decisions. Results of this study show that the presence of an inter-group RPF has a negative effect on peer reporting.*

*Results also suggest that when individuals perceive their supervisor as fair, they will be more likely to report peers' overstatement. This only happens when inter-group RPF is absent rather than present.*

*This dissertation contributes to the management accounting research in several ways. First, it extends the evidence about how individuals are motivated by factors different to conventional monetary incentives. Specifically, it focuses on the importance that social comparison have in individual behaviors and it suggests that management control system design has an important role on it. Second, this dissertation not only focuses on the antecedents of dysfunctional behaviors, but also it focuses on analyzing how individuals react when they observe peers' dishonest behaviors. Third, this dissertation analyzes the interactive effect of control systems with other control systems, organizational practices and individual cognitive orientation. Finally, this dissertation has implications for management in practice. It provides evidence about when management control systems have positive or negative effects on individual behaviors in organizations. Therefore, the results of this dissertation could help managers to design suitable management control systems in order to motivate behaviors in individuals towards organization's interests.*

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# CHAPTER 1: Introduction

## 1.1. Introduction

## 1.2. Dysfunctional behaviors in organizations

## 1.3. Management control system design

## 1.4. Research questions and contributions

## 1.5. Dissertation outline

## References

## 1.1. Introduction

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The general objective of this dissertation is to examine how management control system (MCS) design influences dysfunctional behaviors in organizations. With this end, I conducted three experimental studies. In the first one, I tested the hypotheses related to how (dis)honesty in performance reporting is influenced by the relationship between the design of management control systems and the cognitive orientation. The second one, it is focused on how relative performance feedback (RPF) affects individuals performance. Finally, the last experimental study analyzes the effects of fairness perception and inter-group RPF on whistleblowing decisions.

This dissertation combines economic theories with psychological theories about individual behaviors. Control systems which are designed based on the assumption that individuals act opportunistically to maximize their

profit are not always optimal (Hannan, 2005; Rankin, Schwartz & Young, 2008; Rigdon, 2009). Traditional economic theory assumes that individuals are only motivated by their self-interest and their wealth maximizing (Birnberg, 2011). However, behavioral and psychology research highlights that individuals do not behave in a totally self-interested manner, but they conform to certain norms such as fairness, equity, trust, honesty, or a willingness to cooperate (Birnberg, 2011). Therefore, a better integration of psychology and accounting research is needed in order to better understand how individuals are motivated in organizations by management control systems.

In this chapter, I explain the motivation of this study. In the section 2 of this chapter, I define dysfunctional behavior and explain the importance to analyze the specific behaviors that I analyze in this dissertation. The section 3 highlights the importance to analyze how management control system design affects dysfunctional behaviors. Then, I present the research questions that this dissertation tries to answer and the main contributions (section 4). I finalize this chapter with the dissertation outline (section 5).

### **1.2. Dysfunctional behaviors in organizations**

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In organizations, individuals decide whether to act in favor of their own interest or in pro of common benefit of their group or organization (Probst, Carneavale & Triandis, 1999). They may behave in a dysfunctional way in order to meet only their own interests. Dysfunctional behaviors could be defined as behaviors carried out by an individual or group of individuals which have negative consequences for other individual, group and/or the organization itself (Griffin & Lopez, 2005).

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This dissertation examines the effects of management control systems design in an important dysfunctional behavior: dishonest behavior. Dishonest behaviors not only may have harmful consequences for the organization, but also they may have harmful consequences for co-workers or teammates. Thus, this research focuses on two different dishonest behaviors: (i) one which has negative consequences for the organization (dishonesty in performance reporting); and (ii) another one which can have negative consequences in a team or group (free riding).

Concerns over honesty in managerial reporting have long been recognized in accounting literature (Birnberg, 2011; Mittendorf, 2006). In organizations, individuals have private information that they can use to their self-interest. Related to this, agency theory suggests that individuals are dishonest when they benefit from it (Gneezy, 2005; Rankin et al., 2008). However, several studies have found that people are not completely dishonest as is predicted by the agency theory (Evans, Hannan, Krishnan & Moser, 2001; Hannan, Rankin & Towry, 2006; Rankin et al., 2008). This result could be explained because individuals not only have preferences for benefits that they obtain of their dishonest behavior, but also for being honest (Luft, 1997; Birnberg, 2011).

On the other hand, the raised use of teams in organizations (Kozlowski & Ilgen, 2006) has also increased the interest of researchers for the dysfunctional behaviors in teams. The mere fact of adopting a team-based structure in organizations does not lead to better performance. In contrast, it may result in a lack of coordination and motivation (Schnake, 1991; Wegge & Haslam, 2005), which as consequence could arouse that individuals behave in a dysfunctional manner. Social loafing and free-riding behaviors are two main dysfunctional behaviors which take place in teams (Kidwell & Bennet, 1993; Schnake, 1991; Wegge & Haslam, 2005). Rowe (2004) states that social loafing arises when all team members withhold their contributions to an equal degree. On the other hand, it is

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considered that an individual behaves as free-rider when he/she benefits without contributing to the achievement to the group's joint performance (Rowe, 2004).

Accounting literature has focused extensively on the antecedents of these dysfunctional behaviors and on how mitigate them (e.g. Hannan et al., 2006; Kidwell & Bennet, 1993; Maas & Van Rinsum, 2013; Rowe, 2004; Rowe, Birnberg & Shields, 2008). However, less research has focused on how individuals behave when they know or perceive that their peers are behaving in a dysfunctional way (Mulvey & Klein, 1998; Tata, 2002). Further analysis on this issue is needed since individual behaviors could have important consequences on peers' behaviors, such as dishonest behaviors (Gino, Ayal & Ariely, 2009) and performance (Schnake, 1991; Tata, 2002).

The perception that one or various members of a team are contributing less to the group's output than they could do, have significant implications for team performance (Tata, 2002). When an individual know or perceive that his/her teammates are behaving as free-rider, they may decide to withhold effort to avoid being exploited by their teammates (Kerr, 1983; Schnake, 1991). This effect is known as sucker effect. Therefore, it is not only important to analyze how a management control system design influences dysfunctional behaviors, but also how it influences individual behaviors when individuals observe peers' dysfunctional behaviors.

Furthermore, when individuals observe teammates' dysfunctional behaviors, management control systems not only can influence individual performance, but also it may influence other individual behaviors and decisions, such as peer reporting decisions. Peer reporting arouses diverse and conflicting opinions (Reuben & Stephenson, 2012). In the literature, several studies suggest that some motivations could encourage people to report peers' dishonest behaviors (Fehr & Gächter, 2000; Reuben &

Stephenson, 2012). However, research on whistleblowing has found that employees are generally reluctant to report such misconducts (Robertson, Stefaniak & Crutis, 2011). Therefore, further research is needed to better understand how and which factors affect peer reporting decisions.

### **1.3. Management control system design**

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Management control systems are able to incentive and motivate behaviors in individuals towards organization's interest (Henri, 2006; Naranjo-Gil & Hartmann, 2007). Thus, a suitable design of management control system could reduce the dysfunctional behaviors in organizations. In this vein, it is important to understand how different control system designs influence dysfunctional behaviors in organizations. Based on Simons' control framework, this dissertation analyzes how management control system design influences dysfunctional behaviors. Furthermore, based on relative performance feedback research this dissertation examines how individuals react to peers' dysfunctional behaviors.

I try to extend the Simons' framework to individual behaviors in organizations. Simons (1995) defines four levers of management control systems: beliefs system, boundary system, diagnostic system and interactive systems. This dissertation focuses on the levers of management control systems related to the design: beliefs and boundary systems. The beliefs system is used to define, communicate and reinforce the values, purposes and the organization direction (Simons, 1995). On the other hand, the boundary system communicates the actions which have to be avoided (Simons, 1995). It sets explicit limits and rules that must be respected (Simons, 1995). Both systems could facilitate that individuals compare their own behaviors with desirable organizational behaviors. This fact motivates individuals to reduce their dysfunctional behaviors (Mazar, Amir & Ariely, 2008). Therefore, beliefs system and boundary



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system could be used to counteract undesirable behaviors (Widener, 2007). However, these systems do not work in the same way in all individuals (Scott, 2011), since they have different emotional responses and cognitive orientations (Drach-Zahavy, 2004; Tessier & Otley, 2012).

On the other hand, relative performance feedback research has focused on analyzing the effect of providing this information on performance. This research has based on social comparison theory mainly, which suggests that relative performance feedback will have positive effects on performance (Hannan, Krishnan & Newman, 2008; Taftkov, 2013). However, other factors could moderate this relationship. In this vein, Hannan et al. (2008) found that a relative performance feedback does not always influence positively on individual performance, but it depends on the incentive system. Relative performance feedback encourages social comparison (Taftkov, 2013). The effect of this social comparison on individual performance could depend on how individuals are rewarded (Hannan et al., 2008; Taftkov, 2013). Previous research has found that relative performance feedback influences positively to individual performance when individuals are rewarded by a flat-wage or by an individual performance-based system (Hannan et al., 2008; Taftkov, 2013). However, it influences negatively when they are rewarded by a tournament incentive system and the feedback is sufficiently precise (Hannan et al., 2008). Thus, it is important further research about when relative performance feedback could have positive effects on individual behavior.

In addition, since a relative performance feedback encourages competition (Garcia & Tor, 2007; Taftkov, 2013), it could affect other behaviors different from individual performance. In this line, when whistleblowing decision affects how individuals see themselves in comparison with others, a relative performance feedback could play an important role in this decision. Based on motivation for competition, individual decision

about covering or not his/her peers could depend on whether this decision influences on obtaining favorable comparisons relative to others. Therefore, it is important to extend the accounting literature in this issue.

### **1.4. Research questions and contributions**

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This dissertation tries to answer two general research questions:

- (1) How does management control system design influence dysfunctional behaviors?
- (2) How does management control system design influence individual behaviors when they observe peers' dysfunctional behaviors?

In order to answer these questions, I carried out three studies. The first study focuses on examining how (dis)honesty in performance reporting is influenced by the relationship between the design of management control system (beliefs system vs. boundary system) and the individualism cognitive orientation (Individualism-Collectivism). The results of this study show that: (i) individualist cognitive orientation influences negatively to honesty in performance reporting; and that (ii) this relationship is moderated by a boundary control system. Individualists reported their results less honestly under a boundary system rather than under a beliefs system.

The second study analyzes how relative performance feedback affects individual performance when they work in teams, and they are rewarded by a group performance-based system. The results show that the negative effect of providing information about team members performance (intra-group RPF) on individual performance is mitigated by providing relative information about other teams' performance (inter-group RPF).

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Finally, the third study examines the effects of individuals' fairness perception of the supervisor and inter-group RPF on whistleblowing decision, even though individuals are not rewarded for doing so. The results of this study suggest that: (i) the presence of an inter-group RPF affects negatively to peer reporting; and that (ii) when individuals perceive their supervisor as fair, they will be less likely to report peers' misconduct when inter-group RPF is present rather than absent.

In order to empirically contrast the hypotheses proposed in each study, I conducted three experiments (one for each study). Experiments are a useful and appropriate mechanism for analyzing causal relations under pure and uncontaminated conditions (Kerlinger & Lee, 2000). The participants of these experiments were students from Pablo de Olavide University in Seville (Spain). These types of participants were very adequate since it was not needed any specific knowledge or previous experience to perform the experimental tasks.

This dissertation contributes to the management accounting literature in several ways. First, this research extends the levers of Simons' framework to individual behaviors in organizations. Beyond the organizational strategic control, I show how the design of management control systems influences employees' motivation, a question that Simons' framework left unanswered (Adler & Cheng, 2011). To my knowledge, this is the first study which empirically analyzes the effect of beliefs and boundary systems on dysfunctional behaviors. Second, this dissertation contributes to the demand in accounting literature about which factors influence honesty and how different incentives to conventional monetary incentives influence honest behavior (Evans et al., 2001). Third, in line with recent research, results show that people not only care about their own material payoffs, but also they are motivated by social preferences. In addition, I extend previous research in management accounting by analyzing not only how management control system design affects dysfunctional behaviors,

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but also how it affects to individual reactions when individuals observe peers' dysfunctional behaviors. Finally, since control systems are implemented together other control systems or organizational practices (Kelly and Tan, 2010), this dissertation contributes to the management literature by analyzing the interactive effect of different control systems and organizational practices.

This dissertation also has practical implications. My findings show that organizations should take into account the predominant cognitive orientation of individuals when they design management control systems. A control system which imposes coercive constraints may encourage feelings of psychological reactance in individuals with a cognitive orientation towards individualism. Furthermore, the results of this dissertation show how different design of management accounting information system influence individual decisions about: (i) whether to follow his/her peers and behave in a dysfunctional way; and (ii) whether to report peers' misconducts.

### **1.5. Dissertation outline**

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This dissertation is structured as follows. In chapters 2, 3 and 4, I present the three studies that I have performed. The chapter 2 presents the study entitled "Honesty and Management Control System design". In chapter 3, it is developed my second study entitled "Intra-group vs. Inter-group Relative Performance Feedback". In the chapter 4, I present the study entitled "The effects of Individuals' Fairness Perception and Inter-group Relative Performance Feedback on Whistleblowing decisions". Each of these chapters includes different sections: an introduction, a hypotheses development, a description about the method used to test empirically the hypotheses, the results and the conclusions. Finally the last chapter

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(chapter 5) provides a summary of this dissertation, describes the main contributions and conclusions, as well as identifies the limitations of this research and the future research avenues.

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## **CHAPTER 2: Honesty and Management Control System Design**

- 2.1. Introduction**
- 2.2. Hypotheses development**
- 2.3. Research Method: Experimental design**
- 2.4. Results**
- 2.5. Discussion and Conclusions**

### **Appendix**

### **References**

#### **2.1. Introduction**

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Due to the existence of several accounting scandals, the reporting performance behavior has captured the attention of both the accounting researchers and the general public (Mittendorf, 2006). Individuals have private information they can use to their self-interest, even when it harms the organization. They can often use their discretion in decision-making to falsify their performance reporting (Maas & Matejka, 2009; Mazar, Amir & Ariely, 2008). Thus, an important question to analyze is how honesty in performance reporting can be improved or sustained in organizations (Evans, Hannan, Krishnan & Moser, 2001; Rankin, Schwartz & Young, 2008). One way to meet this issue is by designing management control systems to motivate individuals to act for the organization's benefit

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(Ranking et al. 2008; Tessier & Otley, 2012). However, to be effective management control systems should be sensitive to the self-interest tendency and cognitive orientations of managers (Drach-Zahavy, 2004; Naranjo-Gil, Sánchez, Cuevas & López, 2012). This study analyzes the effect of management control system design and cognitive orientation on honesty in performance reporting by combining insights from the accounting and psychology literatures.

In this study, honesty is defined as the tendency of individuals to avoid making untrue factual assertions, despite explicit or implicit incentives to the contrary (Evans et al., 2001; Rankin et al., 2008). Traditionally economic research asserts people are dishonest when they benefit from it, regardless of effects on the other side (Gneezy, 2005; Rankin et al., 2008). Agency theory assumes that when there are not incentives or contracts that induce an honest behavior, subordinates falsify or misrepresent their performance to serve their own interest (Rankin et al., 2008). However, several studies have found that people are not completely dishonest as is predicted by the agency theory (Evans et al., 2001; Hannan, Rankin & Towry, 2006; Rankin et al., 2008).

These findings can be explained by equilibrium models, where individuals balance the utility of the gain and the disutility of being dishonest (Brickley, Smith & Zimmerman, 1997; Luft, 1997). Individuals have preferences both as being honest as benefits that they obtain of their dishonest behavior (Luft, 1997). On the one hand, they can prefer to behave honestly to meet with their value systems. In this vein, almost all cultures see honesty as an ethically desirable trait (Murphy, 1993). On the other hand, individuals are tempted by the economic benefits of behaving dishonestly.

An honest reporting could be induced by monetary incentives, but this can be sometimes too costly (Luft & Shields, 2009). Thus, it is important to

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analyze how different control systems, beyond the conventional monetary incentives, affect the behavior of performance reporting (Evans et al., 2001). In this line, I analyze two designs of management control systems: beliefs and boundary control systems (Simons, 1995; Tessier and Otley, 2012).

A beliefs system creates positive forces by signaling the values and direction that managers want subordinates to adopt. On the other hand, a boundary system creates constraints and ensures compliance with orders, which are usually stated in negative terms or as minimum standards. Beliefs and boundary control systems can play a key role to encourage honest behaviors, since they facilitate that individuals think about desirable or standard behaviors and thus they can compare them with their own behavior. When this happens, honesty in performance reporting is higher (Mazar et al., 2008). However, beliefs and boundary control systems will not work in the same way in all individuals (Scott, 2001), since they have different emotional responses and cognitive orientations (Drach-Zahavy, 2004; Tessier and Otley, 2012).

The cognitive orientation of individuals can be defined as the degree to which an individual directs its actions towards its own benefit (individualism) or towards the benefit of a group (collectivism) (Drach-Zahavy, 2004). Thus, the individualism or collectivism orientation of individuals would play a key role in the honesty performance reporting, especially when the interests of individuals and their organizations are in conflicts. In this study, I propose that individuals with high individualist cognitive orientation will report their performance more dishonestly because they prioritize their own interest above the organizational goal (Drach-Zahavy, 2004; Xie, Roy & Chen, 2006). Furthermore, individuals with individualist cognitive orientation value freedom (Hofstede, 1991) and a boundary system limits freedom of action (Simons, 1995). Thus, I propose that the relationship between individualist cognitive orientation

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and honesty in performance reporting could be more negatively under a boundary control system rather than a beliefs system.

To test my research expectations I conducted an experiment with 83 post-graduate students. The results indicate a negative relationship between an individualist cognitive orientation and honesty in performance reporting. Furthermore, the results show that a boundary design of control systems moderates the negative effect of individualist orientation on honesty, such that individualists show lower honesty in performance reporting under a boundary system than under a belief system.

This study contributes to the accounting literature by showing how management control systems can be designed to influence employees' motivation (Adler & Cheng, 2011). I also contribute to the management literature by examining cognitive orientation of individuals as an important motivational factor that can affect the honesty in performance reporting. Furthermore, this study shows how the non-based economic design of control systems can influence the honesty in managerial performance reporting (Evans et al., 2001).

The rest of this chapter is structured as follows. In the next section, I develop the hypothesis about the relationship between cognitive orientation, management control systems, and honesty. The third section describes the experimental methodology. The fourth section presents the results and the final section presents the discussion and conclusions of this study.

## **2.2. Hypotheses development**

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### ***2.2.1. Honesty in performance reporting and cognitive orientation***

Psychology literature distinguishes two major cognitive orientations in people, which are individualism and collectivism (Lies, Wagner & Morgenson, 2007). Individualism refers to the cognitive orientation in which personal interests are accorded greater importance than the needs of groups or organizations (Triandis & Gelfand 1998; Wagner 1995, p. 153). Collectivists, however, emphasize belonging to a group or organization (Xie et al., 2006), they give priority to group goals and performance over individual ones (Earley, 1994). Individualism-collectivism behavior can be considered as a continuous, where individualists emphasize the own-interest; individual achievement and self-reliance (Triandis & Gelfand, 1998; Wagner, 1995).

A collectivist orientation prioritizes the objectives of the group, and it exhibits high commitment to organizational goals (Parkes, Bochner & Schneider, 2001). That is, individuals with a collectivist orientation prefer to act in a way that will not jeopardize the group to which they belong, even if it means the renunciation of higher individual benefits (Drach-Zahavy, 2004; Xie et al., 2006). Xie et al. (2006) found evidence to support that individualists overstate more his self-rating than collectivists. Individualists are motivated to express their positive attributes in order to achieve their own goals (Triandis, 1996), even to inflate their self-evaluation (Farh & Dobbins, 1989). Individuals high on individualism try to enhance their self-image or reputation and so they can overstate their results in order to protect their self-image (Xie et al., 2006). That is, individualists can be more prone to misreporting, overstating their performance, with the purpose of do not jeopardize their self-image (Xie et al., 2006).

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Since individualists place their own interests above those of the organization (Drach-Zahavy, 2004; Xie et al., 2006), they tend to ignore group interest if they conflict with their personal desires (Wagner, 1995). They are less willing to exert effort or sacrifice their own goals to achieve organizational purposes (Ramamoorthy & Flood, 2004). Therefore, I expect that individualists may prefer to make false claims although this will damage the organization they belong. They will be less intrinsically motivated to report their results honestly since they will tend to behave opportunistically to meet their own interest (Triandis et al., 2001). Consequently, I propose the following hypothesis:

*H1: Individualists are more prone to dishonesty in performance reporting than collectivists.*

### ***2.2.2. Cognitive orientation, design of management control systems and honesty in performance reporting***

Management control systems (MCS) are able to incentive and motivate behavior in individuals towards organization's interest (Henri, 2006; Naranjo-Gil & Hartmann, 2007). MCS can be used to reconcile the tensions between self-interest of managers and their innate desire to contribute to the organization (Simons, 1995, p. 29). However, MCS will be more effective when they will be continually sensitive to the motivational and psychological factors of individuals (Naranjo-Gil et al., 2012; Towry, 2003), such as the emotional responses to control (Tessier & Otley, 2012) or cognitive orientation (Xie et al., 2006).

Recently, Rigdon (2009) suggested that control systems that are designed based on the assumption that managers shirk and act opportunistically to maximize their profits, are not always optimal (Hannan, 2005; Rankin et al., 2008). Luft (1997) argued that individuals balance the financial

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benefits of shirking or lying with the psychic benefits of honesty. In this line, Hannan et al. (2006) and Ranking et al. (2008) showed that managers are not as dishonest as predicted by pure selfishness. Individuals often face a conflict of priorities or dilemma, they prefer to act honestly, but they are tempted also by gains of behaving dishonestly (Mazar et al., 2008; Mittendorf, 2006).

Mazar et al. (2008) stated that at the moment of temptation, individuals think about the standards of behaviors and compare them to their behavior. These standards of behavior are shown by the MCS in organizations (Simons, 2000, 1995). Simons (1995) identified two designs of MCS in organizations: belief system and boundary system. The beliefs system is a formal system used to define, communicate and reinforce the core values, purpose and direction of the organization. This system is created and communicated through formal documents such as credos, mission statements and statements of purpose (Simons, 1995, 1994). In contrast, boundary system communicates the actions that employees should avoid (Widener, 2007). It is a formal system used to set explicit limits and rules that must be respected. Boundary systems are created through codes of conduct or business rules (Simons, 1995, 1994).

When individuals do not share the organization's objectives and goals, it may result in self-interested behavior overriding organizational interest (Simons, 1995), such as dishonesty in performance reporting. An appropriate design of MCS can counteract the undesirable behavior of individuals (Widener, 2007), and such it may moderate the tendency of some managers to behave on its own interest and behave dishonestly in organizations. Beliefs and boundary control systems could engage individualists in organizational values. Thus, they can reconcile the self-interest of individuals and organizational goals (Simons, 1995) by facilitating individuals to think about desired behaviors and compare them with their own behaviors (Mazar et al., 2008).



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The same control system can be perceived differently by individuals (Scott, 2001) since individuals have different emotional responses to controls (Tessier & Otley, 2012). Individual attitudes are positive when formalization enables them “to better master their tasks” and will be negative when it “functions as a means by which management attempts to coerce employees’ effort and compliance” (Adler & Borys, 1996, p. 61). Individualists are characterized as valuing freedoms (Hofstede, 1991), and thus, autonomy is a necessary and important aspect of them. The restrictions of the boundary control systems limit freedom of action (Simons, 1995, p. 47) and thus, they are likely to be viewed by individualists as a threat to their freedom and therefore arouse psychological reactance (Shen & Dillard, 2005).

Brehm & Brehm (1981, p. 37) defined psychological reactance as “the motivational state that is hypothesized to occur when a freedom is eliminated or threatened with elimination”. Reactance produces a desire to restore the own interest (Shen & Dillard, 2005), which can cause behaviors that are at odds with the desired behaviors. Individuals can behave against the direction of a coercive message after encountering a threat that limits the freedom to choose (Seeman, Carrol, Woodard & Mueller, 2008). In this vein, Waterman (1981) supported that when it is perceived that constraints on freedom are imposed to produce cooperation or helping, the resulting feelings of psychological reactance will actually reduce the probability of pro-social and honest behaviors.

Since boundary control systems, as opposite to beliefs control systems, are perceived as constraints, I would expect that it encourages feelings psychological reactance in managers with a predominant individualist cognitive orientation. This reduces the willing to exert efforts to behave honestly to achieve the goals of the organization (Drach-Zahavy, 2004; Xie et al., 2006). Thus, I expect that boundary control design leads

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individualist to dishonest behavior in performance reporting. Therefore, I formulate the following hypothesis:

*H2: Management control system design moderates the relationship between individualist cognitive orientation and honesty in performance reporting, such that this relationship is more negative with a boundary control design than with a belief control design.*

### **2.3. Research Method: Experimental design**

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To test my hypotheses I conducted an experiment with 83 post-graduate students from Pablo de Olavide University in Seville (Spain). These subjects were chosen since no specific knowledge was necessary to perform the experimental task. Moreover, no accumulated experience or professional knowledge was necessary to know the individuals' cognitive orientation. The independent variables were management control systems (beliefs system or boundary system) and individual's cognitive orientations (cognitive orientation toward individualism). The dependent variable was honesty in performance reporting.

#### ***2.3.1. Experimental procedure and task description***

Before participating in the experiment, subjects took a test in order to identify their cognitive orientation (Naranjo-Gil et al., 2012). Then, I met with subjects in a different day. In this day, subjects participated in an experimental session. In each session, a single condition of the experiment was run. Subjects participated in the experiment voluntarily. Each subject was paid a "show-up" fee of 5€. They could increase their payoff according to their results obtained in the experimental activity.

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I used Z-Tree software to program the experimental task (Fischbacher, 2007). The task consisted in answering the maximum number of questions at a given time (Maas & Van Rinsum, 2013). The total number of questions was seventy-five, for which the individuals had ten minutes in total. Next, the actual number of correct answer was communicated to each individual. Then, they had to report how many questions they had solved correctly, but taking into account that their payoff was determined by this report and not by the actual number of correct answers (Maas & Van Rinsum, 2013). That is, the number of correct answers that they reported did not necessarily have to be the same as the actual number of questions answered correctly.

Following Maas & Van Rinsum (2013), subjects were entered into a room in which I provided them the instructions. After all subjects read and understood the instructions, they were randomly provided with a participant code which matched the code of the computer in which they had to do the task. The task started at the same time on all computers. Subjects answered up seventy-five multiple choice questions for a maximum of ten minutes. All subjects got the same questions and they were always provided in the same order. Subjects could move to the next question without picking an answer, but they could not go back (Maas & Van Rinsum, 2013). For each question, they had twenty seconds and although they would not have answered the question, after these twenty seconds, they automatically moved to the next question. At the end of the ten minutes, subjects received a message in which was communicated the actual number of questions that they had answered correctly. Next, I asked for each individual the number of answers that he or she has answered correctly, taking into account that they were paid by the number that they said and not by the actual number of correct answers. Participants were noted that it was the figure they reported, and not the actual number of

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correct answered, which determined the payoffs (Maas & Van Rinsum, 2013).

All subjects were rewarded for the amount reported, so everyone had the same motivation to distort information about their results (Maas & Van Rinsum, 2013). To preserve the anonymity of the subjects and to avoid they feel inhibited when reporting their outcome, they were provided with an identification code (we did not ask their names) (Evans et al., 2001; Maas & Van Rinsum, 2013). This was reinforced, making the payment to subjects in a separate room and by a person different from the responsible of the experiment (Evans et al., 2001).

### ***2.3.2. Manipulation and measures of the variables***

I measured the level of honesty, based on the ratio established by Evans et al. (2001), as follows:

*Level of Honesty =  $1 - ((\text{number of questions that the subject reported as answered correctly} - \text{the actual number of questions answered by the subject correctly}) / (\text{total number of questions} - \text{the actual number of questions answered by the subject correctly}))$ .*

I used the multitrait-multimethod approach recommended by Triandis, Chen & Chan (1998) to measure cognitive orientation. This test combined three instruments to capture the multidimensionality of individualism and collectivism: social content; behavior content (Kim, Triandis, Kagitcibasi, Choi & Yoon, 1994); and the Yamaguchi (1994) collectivism scale adaptation. I communicated to the subjects that they should answer the questions based on what they think they would actually do, not on what they think they should do. Some questions that they had to answer were: "Are you the kind of person who is likely take time off from work to visit an ailing friend"; "You show resentment toward visitors who interrupt

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your work”; or, “You sacrifice self-interest for your parents” (Naranjo-Gil et al., 2012).

Since the questionnaire instruments had different ranges and measurement values, I standardized each instrument score by subtracting the grand mean for all subjects from each individual subject’s score and dividing this result by the standard deviation for all subjects (Naranjo-Gil et al., 2012). All standardized score were summed, providing an overall score for each subject.

The manipulation of management control system was based on Mazar et al. (2008) and Simons (1995). To my knowledge this is the first paper that analyzes empirically the effect of belief and boundary systems on individual behaviors. Mazar et al. (2008) used experiments to show that when attention to standards of behavior increases, individuals’ dishonesty will decrease. Mazar et al. (2008) used the Ten Commandments and an Honor Code as standards of behavior. Although the systems used by Mazar et al. (2008) in order to remember desirable behavior are not a boundary system or a beliefs system exactly; we could find similarities between them. On one hand, the Ten Commandments, like boundary system, establish clear limits on behavior and they are stated in negative terms. On the other hand, an honor code communicates and reinforces the values that must be adopted, which coincides with the main aim of belief system.

Following Simons (2000, 1995) I created a belief control system through a mission statement (Appendix 2.1) and a boundary system control through a code of conduct (Appendix 2.2). In the case of beliefs system I provided the statement mission of Pablo de Olavide University in which were included sentences as: “...with the promotion of solidarity and human values such as honesty and justice” or “University hopes to form an honest, tolerant and responsible university community”. A statement mission is a way to create and communicate a formal beliefs system (Simons, 1995). In

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this document were defined the values, purpose and directions of the university, that is the main characteristics of a beliefs systems that Simons (1995) defined. In contrast, in the case of boundary system I provided the duties of students in the Pablo de Olavide University, some of these duties are: "Students should not neglect or harm the conservation of heritage and university funds" or "Students must not use or cooperate in fraudulent procedures in the evaluation tests in the work being undertaken or in official documents of the university". This document showed students what they did not have to do, that is, these rules established clear rules on behavior and it stated in negative terms, which are key characteristics of a boundary system (Simons, 2000, 1995).

### **2.4. Results**

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#### ***2.4.1. Descriptive Statistics and Manipulation Checks***

The questionnaire reliability test designed to check experimental manipulations show that subjects had a good understanding of the procedures and that the manipulations were successful. The subjects understood that they would be paid by the number of reported questions; regardless of the actual number of correct answers. They also understood that this communication was anonymous. The average score of these items was 3.98 and 4.70, respectively, on a scale of 1 to 5.

The manipulation check of belief systems was carried out by four items. The results indicate that the mission statement of the university defined basic values, purpose and direction of it (3.92, SD = 1.05), these were defined in positive terms (4.37, SD = 0.67) and that it did not specify the behavior that the student must have (2.37, SD = 1.38) neither limited the behavior of the same (1.55, SD = 1.00).

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On the other hand, the manipulation check of boundary systems was also carried out by four items. From the results I can conclude that the duties of the students set limits on their behavior (3.66, SD = 0.94) and were defined in negative terms (3.24, SD = 1.45).

Honesty in reporting measures the degree to which subjects were not willing to exaggerate their results, taking into account their actual scores. It was calculated as 1 minus the overstatement of individuals divided by the maximum number of questions minus their actual score. The mean value of honesty in reporting was 73.43%.

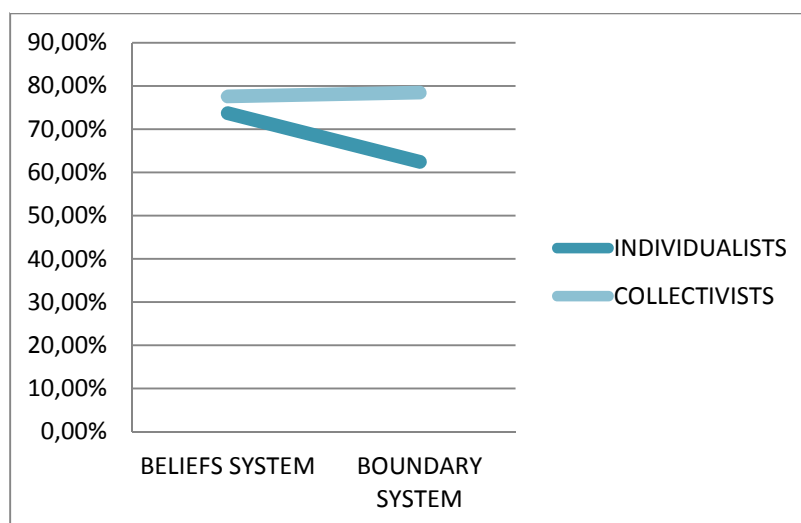
Table 2.1 (1) shows the descriptive statistics for the variables I analyzed. Figure 2.1 (1) shows a graphical summary of honesty in performance reporting. These descriptive statistics show that individualists (69.06%, SD=0.34) were less honest in reporting than collectivists (77.93%, SD=0.31), regardless of the management control system design. Under a beliefs system and under a boundary system collectivist were more honest when they report their results than individualists. However, no significant differences were found. The lowest mean value of honesty in performance reporting was found when individuals had a high individualist cognitive orientation and it was used a boundary control system design (62.46%, SD=0.42). Individualists were less honest under a boundary system than a beliefs system (73.68%, SD= 0.28). On the other hand, the mean value of honesty of collectivists was very similar under a beliefs (77.51%, SD=0.28) and boundary system (78.44%, SD=0.35).

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**TABLE 2.1 (1). Descriptive Statistics**

		Honesty in performance reporting	Misreporting	Max-misreporting
BELIEFS SYSTEM	Individualist	73.68%	80% (16/20)	5% (1/20)
	Collectivist	77.51%	55.56% (10/18)	0%
	Total	75.49%	68.42% (26/38)	2.63% (1/38)
BOUNDARY SYSTEM	Individualist	62.46%	50% (7/14)	7.14% (1/14)
	Collectivist	78.44%	33.33% (5/15)	0%
	Total	70.72%	41.38% (12/29)	3.45% (1/29)
TOTAL	Individualist	69.06%	67.65% (23/34)	5.88% (2/34)
	Collectivist	77.93%	45.45% (15/33)	0%
	Total	73.43%	56.78% (38/67)	2.99% (2/67)

**FIGURE 2.1 (1). Honesty in performance reporting**





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Misreport in Table 2.1 (1) shows the percentage of subjects who overstated their results and Max-misreport indicates the percentage of subjects who reported that they answered correctly the maximum number of questions available (they report that they answered correctly seventy-five questions). In the experiment thirty-eight people misreported their results (56.72%), but only two people reported that their score in the task was seventy-five (2.99%). This result is consistent with previous findings showing that people are not completely honest, but they are not as dishonest as predicted by pure selfishness (Evans et al., 2001; Hannan et al., 2006; Rankin et al., 2008). The most percentage of people who misreported their results was found under a beliefs system (68.42%), concretely when subjects were individualists (80%). On the other hand, the lowest percentage was found when subjects were collectivist and it was used a boundary system (33.33%).

Altogether, the descriptive statistics suggest that individuals with high individualist cognitive orientation are more willing to overstate their results than collectivist and that willingness of individualists is higher under a boundary control system. This is consistent with my hypotheses.

### ***2.4.2. Hypotheses tests***

In order to test my hypotheses I used a 2x2 ANOVA test, which allows contrasting the direct and interactive effects of two or more independent variables simultaneously. I ran a factorial model with the cognitive orientation of individuals and the management control system (MCS) as fix factors and the honesty in performance reporting as dependent variable.

The results of the ANOVA analysis (Table 2.2 (2)) show that there is not a significant direct effect of management control system ( $p\text{-value}=0.531$ ), neither of cognitive orientation ( $p\text{-value}=0.230$ ). The results also show a

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no significant interaction effect. Therefore, hypothesis 1 (H1), which predicts that individualists will be more dishonest in performance reporting than collectivists, is not supported.

I extend this analysis by examining the effect of cognitive orientation on honesty in the complete sample (it is not excluded the no management control system condition). Similar to ANOVA analysis, I did not find significant differences in honesty between individualists and collectivists ( $F=1.434$ ,  $p\text{-value}=0.235$ ).

**TABLE 2.2 (2). ANOVA. Effects on Honesty in performance reporting**

	Df	F	p-value
Intercept	1	319.681	0.000
MCS <sup>†</sup>	1	0.397	0.531
Cognitive Orientation	1	1.470	0.230
MCS * Cognitive Orientation	1	0.554	0.460
Error	63		

<sup>†</sup> This independent variable is whether the management control system is a beliefs or a boundary system. That is, this ANOVA excludes the “no management control system” condition.

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**TABLE 2.3 (3). Simple Effects**

<u>Source</u>	<u>Df</u>	<u>F</u>	<u>Sig.</u>
Effect of MCS when cognitive orientation is individualist	1	0.867	0.359
Effect of MCS when cognitive orientation is collectivist	1	0.007	0.933
Effect of cognitive orientation under beliefs system	1	0.173	0.680
Effect of cognitive orientation under boundary system	1	1.244	0.275

My second hypothesis states that the design of management control system moderates the relationship between the cognitive orientation toward individualism and the level of honesty in performance reporting. I predicted that the relationship will be more negative with a boundary control systems design than with a belief control design. The simple effect analysis (Table 2.3 (3)) shows that there is no significant effect of cognitive orientation on honesty in performance reporting when it is present a boundary system (p-value=0.275) or a beliefs system (p-value=0.680). In addition, there is no significant difference in individualist honesty when a beliefs system is present and when a boundary system is present (p-value=0.359). Thus, I did not find support for hypothesis 2 (H2).

The lack of significance may be caused by the use of cognitive orientation variable as a dichotomous variable. I considered individualistic subjects who are below the median score on the questionnaire completed, and collectivist those exceeding this score. This might force individuals who

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were near the median to become individualistic, despite their cognitive orientation is closer to the collectivist orientation. It is therefore necessary to perform this analysis by considering the cognitive orientation as a continuous variable in which subjects have a level of individualist orientation. Thus, I tested my hypotheses, but using the cognitive orientation as a continuous variable from totally individualist towards totally collectivistic. Thus higher scores indicate a higher individualist cognitive orientation and lower scores of this variable indicate a higher collectivist cognitive orientation.

First, I tested if there is a negative relationship between individualist cognitive orientation and the level of honesty (H1). Table 2.4 (4) shows support for my first hypothesis. It shows a negative and significant correlation coefficient between honesty and cognitive orientation toward individualism (-0.228,  $p\text{-value} < 0.05$ ).

**TABLE 2.4 (4). Correlation analysis (N=83)**

		Honesty in reporting
Cognitive orientation toward individualism	Pearson correlation coefficient	-0.228
	Sig.	0.038

On the other hand, I proposed in my hypothesis 2 that this relationship will be more negative under a boundary control system than under a beliefs control system. In order to test this, I calculated Pearson correlation coefficient in each subsample (belief control system and boundary control system).

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**TABLE 2.5 (5). Correlation analysis under boundary system (N=29)**

		Honesty in reporting
Cognitive orientation toward individualism	Pearson correlation coefficient	-0.354
	Sig.	0.059

**TABLE 2.6 (6). Correlation analysis under beliefs system (N=38)**

		Honesty in reporting
Cognitive orientation toward individualism	Pearson correlation coefficient	-0.147
	Sig.	0.379

Results in Table 2.5 (5) show a negative and significant correlation between individualistic cognitive orientation and honesty in performance reporting under a boundary system (-0.354,  $p\text{-value} < 0.10$ ). Furthermore, results in Table 2.6 (6) show a negative but non-significant relationship between individualist cognitive orientation and honesty in reporting under a beliefs control system (-0.147,  $p\text{-value} > 0.10$ ). These results support my second hypothesis. They suggest that management control system design moderates the relationship between individualistic cognitive orientation and honesty in performance reporting. A boundary system, rather than a beliefs system, moderates the negative relationship between individualist cognitive orientation and honesty in reporting, so that individualists show lower honesty in performance reporting under a

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boundary system. These results are consistent with the boomerang effect from previous literature on psychological reactance (Shem and Dillard, 2005; Seeman et al., 2008).

### **2.5. Discussion and Conclusions**

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In this study, I analyzed how individuals' cognitive orientation influences the level of honesty when individuals report their results. I also analyzed the moderating effect of management control systems on the relationship between cognitive tendency and honesty in performance reporting. I use Simons' framework (1995) to analyze how the design of management control system (belief vs. boundary) could influence on the dishonesty of individuals when they report their results.

Results support generally my hypotheses. I found that an orientation towards individualism affects negatively the level of honesty in performance reporting. Furthermore, it was found that this relationship was moderated by a boundary design of management control system rather than by a belief control system. A boundary control system increased the negative influence of individualist orientation on honesty in performance reporting. This is consistent with previous findings that show that to limit the freedom of action of individuals can encourage psychological reactance and so, a boomerang effect (Seeman et al., 2008; Shem & Dillard, 2005). Individuals with a high individualism orientation could feel jeopardized their autonomy under a boundary system and, in order to restart their freedom, they could behave against the desired behaviors (Seeman et al., 2008), such as it has been found in our results. On the other hand, beliefs system did not moderate the relationship between cognitive orientation and honesty in performance reporting. Although individuals with higher cognitive orientation toward

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individualism were informed about values, purposes or direction of the organization, they prioritize their own interest above the goals of the organization (Naranjo-Gil et al., 2012; Triandis et al., 1998).

Mazar et al. (2008) found that when individuals remember the standards of behavior and compare them with their own behavior, individuals' dishonesty will drop. However, in my experiment I show that not all individuals behave in the same way. I found that the tendency of individuals to avoid making an untrue factual assertion, despite explicit or implicit incentives to the contrary, depends on individuals' cognitive orientation (Erez & Somech, 1996; Naranjo-Gil et al., 2012). Mazar et al. (2008) showed that when subjects remembered the Ten Commandments, which establish clear limits in behavior, honesty increased. On the other hand, I found that the reminder of desirable or standard behaviors through a restrictive system, such as boundary system, have negative consequences for individuals' honesty when they are individualists. In this line, I can conclude that the restrictive control systems could have a negative effect on individuals' honesty according to their cognitive orientation.

My results are in line with recent research that show that individuals do not misrepresent their results in the extent predicted (Matuszewski, 2010). This implies that people do not only value their own material payoffs. As Fehr & Fischbacher (2002) and Hannan (2005) suggested, incentives and control systems are not always optimal if they are designed based on the assumption that people only care their own gain and that they act opportunistically to maximize their profits (Rigdon, 2009). Future research should analyze how non-monetary incentives, such as social preferences, influence the behavior of individuals in organizations.

This study extends the levers of Simon's framework to individual reporting behavior in organizations. My findings show how the design of management control systems influences employees' motivation, a question

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which Simons' framework leaves unanswered (Adler & Cheng, 2011). Furthermore, I shed light on which factors influence the honesty and how different control systems to conventional monetary incentives influence honesty in performance reporting (Evans et al., 2001).

The findings of this study also have practical implications. Managers in organizations should consider the predominant cognitive orientation of individuals when they design management control systems. They should consider that control systems which impose coercive constraints to individuals may encourage feelings of psychological reactance. At the same time, my study has several limitations, apart from those inherent to the experiment methodology, such as generalizability to a real-world setting. More research is required to determine whether our results are reproducible in other organizational environment, such as a team-based setting. The lack of significance across the belief system subsample could be simply a function of sample power and, thus, future research could replicate the experiment with a bigger sample. I did not set any punitive sanction for the non-compliance with such rules. Boundary system warns that some types of behaviors will not be tolerated (Simons, 1995), but it cannot be effective without credible sanctions (Coleman, 1990). Future research could analyze the effectiveness of the boundary system when it is accompanied by credible penalties. Moreover, future research could analyze the effect of beliefs and boundary control systems used at the same time, since positive and negative controls are opposing forces that need to coexist to create dynamic tensions which in turn ensure effective control (Tessier & Otley, 2012).



## **Appendix**

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### **Appendix 2.1. Beliefs Control System**



#### **MISSION**

*As an educational space for higher education, the University Pablo de Olavide is in the service of society and is defined as a place of reflection and critical thinking committed to contributing to progress, with the teaching of respect for fundamental rights and civil liberties with the promotion of solidarity and human values such as honesty and justice, and the response to the needs and problems of contemporary society. The University will seek the widest social projection of its activities, by establishing the channels of cooperation and assistance to the society to contribute and support the social, economic and cultural.*

*University hopes to form an honest, tolerant and responsible university community, capable of caring for and ensure the conservation of heritage and university funds.*

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### Appendix 2.2. Boundary Control System



- a) Students should not disobey the laws in force, the Statutes, regulations and other rules that implement them.
- b) Students should not violate on their academic obligations, contributing their efforts to the quality of public university education.
- c) Students must not violate the participation in the electoral process led to the election of their representatives.
- d) Students should not disregard the responsibilities of the positions for which they had been selected and appointed.
- e) Students should not irresponsibly participate in assessment processes of educational activities and services.
- f) Students should not neglect or harm the conservation of heritage and university funds.
- g) Students should not disparage, insult or belittle the members of the university community, the staff of the collaborating or who providing services at the university.
- h) Students must not use or cooperate in fraudulent procedures in the evaluation tests in the work being undertaken or in official documents of the university.
- i) Students should not affect the improvement of the purposes and operation of the university.

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## **CHAPTER 3: Intra-group vs. Inter-group Relative Performance Feedback**

- 3.1. Introduction**
- 3.2. Hypotheses development**
- 3.3. Research Method: Experimental design**
- 3.4. Results**
- 3.5. Discussion and Conclusions**

**Appendix**

**References**

### **3.1. Introduction**

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Accountants play a key role in designing information and performance feedback to decision makers (Bonner & Sprinkle, 2002; Taftkov, 2013). Relative performance feedback let individuals compare each other. Then, it will affect individual behaviors, since people are motivated by social comparisons (Luft and Shields, 2009). However, disclosing relative performance feedback is costly (Taftkov, 2013). Thus, accountants need to understand when relative performance feedback will have a positive effect on performance. Thus they can weigh the pros and cons of designing and implementing performance feedback systems (Taftkov, 2013). In order to contribute to this issue, this study analyzes how relative performance



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feedback (RPF) affects individual performance when they work in teams and they are rewarded by a group performance-based system. Specifically, I analyze the effect of inter-group RPF and intra-group RPF on individual performance.

Psychology literature predicts that relative performance feedback affects performance, even in the absence of pecuniary considerations (Hannan, Krishnan & Newman, 2008), since people value how they are seen by others and in comparison with others (Luft & Shields, 2009). Previous research has shown a positive effect of relative performance feedback in employees' performance, when compensation is not tied to peer performance (Hannan et al. 2008; Taftkov, 2013). Furthermore, several studies state that reducing noise in the information about each other's payoffs and actions increases cooperation in prisoner's dilemma games (Kahn & Murnighan, 1993; Miller, 1996; Sainty, 1999). In this vein, Kelly & Tan (2010) found evidence that the feedback system fosters trust in fellow employees and sustains cooperation over time. However, Hannan et al. (2008) found that relative performance feedback not always improves performance, but this depends on the incentive system. Their results, suggest that feedback may not always be a positive force (Kluger & DeNisi, 1996; Hannan et al., 2008). RPF influences positively to individual performance under a flat-wage (Taftkov, 2013) and under an individual performance-based system (Hannan et al., 2008; Taftkov, 2013). However, under a tournament incentive system, RPF deteriorates individual performance if the feedback is sufficiently precise (Hannan et al., 2008). This study extends this issue by analyzing the effect of RPF on individual performance when individuals are rewarded by a group performance-based system.

When individuals work in teams and they are rewarding equally, regardless of their contributions to the group work, they often face incentives to shirk rather than to cooperate (Erev, Bornstein & Galili,

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1993; Kelly & Tan, 2010). It appears the free rider problem. In this vein, several studies have analyzed extensively the causes of free-riding behavior (Kidwell & Bennet, 1993; Rowe, 2004; Rowe, Birnberg & Shields, 2008). Significantly less research has analyzed the perceptions of free riding behavior (Mulvey & Klein, 1998). The perception of this behavior has significant implications for performance (Tata, 2002). However, little research has focused on how individuals behave when they know or perceive that their teammates are behaving as a free rider.

Individuals can know how their teammates are behaving through an intra-group RPF, which provides information about all team members. Individuals who know they will receive the same level of rewards as other members may experience inequity if they believe that other team members intend to withhold effort (Schnake, 1991). Thus these individuals may reduce their own contributions to the group (Kerr, 1983; Schnake, 1991) because they do not wish to be exploited by other team members. This is known as sucker effect (Karau & Williams, 2001; Kerr, 1983; Schnake, 1991).

On the other hand, psychological research has found that individuals not always will reduce their effort when they know or perceive that other team members have a poor performance (Wegge & Haslam, 2005; Williams & Karau, 1991). Even, they state that when team members value the team performance, individuals will increase their effort in order to compensate the teammates' performance. Inter-group RPF could play a key role in this issue since it provides information about the performance of different teams. This information could facilitate the social comparison between teams. The opportunity for inter-group comparisons creates a social competition to see one's own group as better than an out-group (Turner, 1975). Thus, inter-group RPF could increase the value that team members have of team performance since individuals value to achieve favorable comparisons. Therefore, similar to others studies which found

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that inter-group social comparison can mitigate motivation loss (Erev et al., 1993; Ouwerkerk & Ellemers, 2002; Worchel, Rothgerber, Day, Hart & Butemeyer, 1998), I propose that an inter-group RPF could reduce the negative effect of intra-group RPF on individual performance.

To test my proposition, I conducted an experiment with a 2x2 design. The independent variables are the intra-group relative performance feedback (absent vs. present) and the inter-group relative performance feedback (absent vs. present). The dependent variable is the individual performance of team members. The results show that intra-group relative performance feedback has a negative effect on individual performance and that inter-group relative performance feedback mitigates this negative effect.

This study contributes to the management accounting research by extending our knowledge about how relative performance feedback influences how the people react to dysfunctional behaviors of their teammates. In addition, this study could have implications for practitioners by showing how the design of the information system can reduce dysfunctional behaviors in teams by aligning the individuals' interest with the interest of the organization.

### **3.2. Hypotheses development**

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When individuals work in teams and they are rewarded based on group performance, the free rider problem can arise (Kerr, 1986; Rutte, 1990; Yamagishi, 1988). Numerous studies have focused on the antecedents of free riding behavior (Kidwell & Bennet, 1993; Rowe, 2004; Rowe et al., 2008). However, significantly less research, both theoretical and empirical, has focused on the perceptions of free riding (Mulvey & Klein, 1998).

The perception that one or various members of a group are contributing less to the group's output than they could do, have significant implications

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for team performance (Tata, 2002). In the psychological literature we can find two streams, which argue two opposite direction of team members' behavior when they perceive that other team members are behaving as a free-rider.

On the one hand, several studies argue that when individuals work in teams they may fear that others in the group will withhold effort and thereby benefit from the individuals' contributions (Jackson & Harkins, 1985). Therefore, in order to avoid becoming a person who plays sucker roles, individuals attenuate their efforts (Erez & Somech, 1996; Kerr & Brunn, 1983; Kidwell & Bennet, 1993). Individuals who play a sucker role are persons who are easy to take advantage of them because they contribute to the group performance when nobody else does. Individuals are averse to sucker roles because the violation of some social norms like the equity norm, the reciprocity norm and the social responsibility norm make the sucker role uncomfortable (Kerr, 1983). Thus, when individuals perceived that other team members may free ride and take advantage on their contributions without any contribution from them, they may reduce their own contributions to the group in order to avoid to be exploited by other team members (Kerr, 1983; Schnake, 1991).

On the other hand, contrary to sucker effect, several studies have stated that work motivation is enhanced when a group member realizes or anticipates that another group member is performing poorly (Wegge & Haslam, 2005). Karau & Williams (1997) and Williams & Karau (1991) found evidence that group members sometimes compensate for the deficiencies of other group member on a collective task in order to ensure group success (Wegge & Haslam, 2005). This effect is known as social compensation. The psychological literature has also found that the social compensation is more likely to happen when the group task is perceived as meaningful (Williams & Karau, 1991). Also if individuals are concerned about how the group's performance is evaluated (Wegge & Haslam, 2005).

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It has been found that social compensation is higher in groups relatively small (Williams & Karau, 1991), groups with high cohesion (Karau & Hart, 1998) and if group members identify themselves with other members of the group (Haslam, 2004; Haslam & Ellemers, 2005; van Knippenberg & Ellemers, 2003).

In this study, I propose that the effect of the perception of free-riding behavior on performance depend on the information provided by the relative performance feedback.

#### ***3.2.1. The effect of Inter-group RPF on individual performance***

An inter-group RPF provides information about the performance of different teams. People not only compare themselves with others, but also compare the group to which they belong with other groups (Goethals & Darley, 1987; Williams & Karau, 1991). An inter-group relative performance feedback can facilitate the comparison between groups and encourage higher effort of team members in order to maintain a positive self-image (Beach & Tesser, 1995; Tesser, 1988). The opportunity for inter-group comparisons creates a social competition to see one's own group as better than out-group (Turner, 1975). In this vein, several studies have found that inter-group social comparisons can reduce or eliminate motivation loss (Erev et al., 1993; Ouwerkerk & Ellemers, 2002; Worchel et al., 1998).

According to the social identity theory, people in inter-group situations have the desire to make favorable comparisons of one's own group against other groups (Hogg, 2000; Lount & Phillips, 2007; Tajfel & Turner, 1986). I argue that inter-group relative performance feedback, since fosters inter-group social comparisons, increases effort due to increased competition. People try hard to maintain positive self-concept, which can be reached by

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attaining a positive social identity (Tajfel & Turner, 1986). One possibility to achieving such a positive identity is to discover that one's group compares with other groups positively (Harkins & Szymanski, 1989). Thus, I propose the following hypothesis:

*H1: Performance will be greater when inter-group RPF is present than when it is absent.*

#### ***3.2.2. The effect of Intra-group RPF moderated by Inter-group RPF***

An intra-group relative performance feedback provides information about all team members. This information may reveal shirking from some fellows and, as a result, create distrust between team members (Coletti, Sedatole & Towry, 2005). When the information provided to individuals reports that other team members withhold effort and they are rewarded by a group performance-based contract, individuals can feel fear that others benefit from the individuals' contributions (Jackson & Harkins, 1985). As consequence, due to the strong aversion that people have against to be a sucker (Fehr & Gächter, 2000; Schnake, 1991), individuals with high performance may reduce their own contributions to the group (Kerr, 1983; Schnake, 1991). Team members may experience inequity if they receive the same level of rewards as other members and they believe that members of the group withhold effort (Schnake, 1991). In order to restate the equity and to avoid being exploited by other team members, individuals may reduce their own effort. Therefore, I expect team members reduce their effort when an intra-group relative performance feedback is provided.

I propose that the effect of intra-group relative performance feedback could be mitigated by providing an inter-group relative performance feedback. Williams & Karau (1991) found that individuals who perceived

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that their fellows would free-ride on their contributions worked harder in order to compensate for other team members' poor performance (social compensation effect). However, this only happened when the group performance was valued. The results from Williams & Karau (1991) study suggest that, although individuals may find it psychologically aversive, they will compensate a free-rider fellow whenever they value the group performance (Shepperd, 1993). An inter-group relative performance feedback may let the evaluation of the team performance because it facilitates the comparison between teams. It would increase the value associated with the group performance since people desire positive evaluation, especially in comparison with others (Williams & Karau, 1991). Individuals who experiment negative social identity will leave their group or will attempt to make it better (Goethals & Darley, 1987). A negative social identity could be experimented if one's group compares unfavorably with other groups. Williams & Karau (1991) argued that one way to make the group better and, as a result, to achieve a positive identity, would be to work harder, that is, to compensate the fellows' poor performance.

Therefore, I propose that when an intra-group relative performance feedback reveals shirking from some team members, individuals will compensate their fellow's contributions whenever an inter-group relative performance feedback will be provided. In spite of the psychological costs that the information provided by an intra-group relative performance feedback would encourage, individuals will be more willing to compensate for loafing of other team members in order to achieve favorable comparisons with other groups. That is, the sucker effect produced in individuals by an intra-group RPF will affect less negatively on performance when information about other teams performance is provided. Therefore, I propose the following hypothesis:

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*H2: The relation between intra-group RPF and performance will be moderated by inter-group RPF, such that performance will be better when inter-group RPF is present rather than when it is absent.*

### **3.3. Research Method: Experimental design**

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The hypotheses were tested by an experiment with a 2x2 design. The experiment was conducted among 90 students from Pablo de Olavide University in Seville (Spain). The choice of such subjects is due to the fact that to carry out the task did not need any specific knowledge or previous experience. The subjects participated in the experiment on a voluntary and anonymous way, and they gained real monetary rewards for their participation.

The independent variables were intra-group relative performance feedback (present vs. absent) and inter-group relative performance feedback (present vs. absent). The dependent variable was the individual performance.

#### **3.3.1. Task Description**

I used Z-Tree software to program the experimental task (Fischbacher, 2007). The task was based on Taftkov (2013) and it consisted in solving multiple choice multiplication problems for nine independent rounds. In each round, the subject received six multiplication problems. For each problem, five possible answers were provided, and just one was correct.

I chose this task because it satisfies the three requirements for a strong relationship between comparison and competitive behavior. The first requirement is that the task must be similar across individuals to allow



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comparison (Harkins & Jackson, 1985; Garcia & Tor, 2007). In the experiment, all subjects received the same multiplication problems and in the same order (Tafkov, 2013). The second one is that the comparison target must be similar on related attributes (Goethals & Darley, 1987; Garcia & Tor, 2007). This was satisfied due to the fact that all participants were recruited from a homogeneous pool (Tafkov, 2013). The third requirement is that the comparison domain must be important to the person (Pleban & Tesser, 1981; Tesser, 1991). In the experiment, subjects were told that solving the given multiplication problems accurately and quickly not only requires mechanical skills, but also general problem-solving ability (Tafkov, 2013).

#### ***3.3.2. Experimental procedure***

During the experiment, I conducted separated sessions for each condition. The procedures described in this section were the same for all conditions. When subjects arrived to the lab, they were placed in a different cubicle. They were able to see the experiment instructions on the screen computer. Also, the instructions were read aloud by the experimenter. The instructions informed to the subjects that they belonged to a team, which it was formed by three people. The subjects had as aim to reach the maximum group performance. The group performance was the addition of each one of the individual productions.

The subjects were rewarded by a group performance-based contract. The team profit was equally divided between all team members, regardless of their contributions. The team profit was compassed by a fix and a variable reward. Specifically, each team received 1500 LECUS (Lab Experimental Currency Unit)<sup>1</sup> only for their participation. In addition, they received 30

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<sup>1</sup> The currency used in this experiment was a fictitious currency: LECUS. The total LECUS earned by a participant was converted to EUROS at the end of the experiment.

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LECUS for each problem solved correctly (a). Also, I assumed that individuals are effort averse. To operationalize the concept of effort aversion, individuals who worked were charged with a production cost (Towry, 2003). Each member had a production cost (b), which was proportional to the problems solved correctly (10 LECUS). Thus, each subject was rewarded for one third of group profit minus the production cost of himself or herself (c).

$$(a) \text{ Team profit} = 1500 + 30 \sum x_i$$

$$(b) \text{ Production cost of member } i = 10 x_i$$

$$(c) \text{ Individual profit} = (\text{Team profit} / 3) - 10 x_i$$

$$x_i = \text{production member}$$

Before the main task started, the subject had to answer a pre-experiment quiz, in order to know that they understood the instructions. After all participants answered all questions correctly, the task started. When participants finalized the task, they answered a post-experimental questionnaire in which participants had to answer demographic and process-related questions.

#### ***3.3.3. Manipulation and measures of the variables***

The dependent variable was the individual performance of team members in the last six rounds. The individual performance was measured by the number of solved problems correctly for each individual for the last six rounds.

The independent variables were the intra-group relative performance feedback and the inter-group relative performance feedback. The first one was manipulated by providing or not providing to the subjects, every three

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rounds<sup>2</sup>, information about his or her own individual performance and the individual performance of each member of his or her group.

On the other hand, in the case of an inter-group relative performance feedback was present, subjects received information about the performance of their own team as well as about the performance of the rest of the teams, which were participating in the session. In the case that it was absent, they did not receive information about other teams' performance.

## 3.4. Results

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### 3.4.1. Descriptive Statistics

Table 3.1 (7) reports the descriptive statistics for the variables performance and change in performance in the four experimental conditions. Figures 3.1 (2) and 3.2 (3) provide a graphical summary of these data. Panel A of Table 3.1 (7) reports, for each condition, the mean performance for all 9 rounds, for the first three rounds, for the middle three rounds and for the last three rounds. These data show that individuals performed better when both RPF were present than when only intra-group RPF was present.

The mean performance was marginally lower when inter-group RPF was absent than when it was present ( $t=-1.711$ ,  $p\text{-value}= 0.091$ ). The mean performance for all 9 rounds, as well as the mean performance for the first three rounds, for the middle three rounds and for the last three rounds differed when inter-group RPF was present and when it was not, whenever intra-group RPF was present (all 9 rounds:  $t=-2.641$ ,  $p$ -

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<sup>2</sup>Following Tafkov (2013) and due to the low incremental information content of RPF after each round, RPF was provided after every three rounds

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value=0.011; first 3 rounds:  $t=-1.811$  ,  $p\text{-value}=0.077$ ; middle 3 rounds:  $t=-2.839$  ,  $p\text{-value}=0.007$ ; last 3 rounds:  $t=-2.012$  ,  $p\text{-value}=0.05$ ).

**TABLE 3.1 (7). Descriptive statistics**

**PANEL A: PERFORMANCE**

	CONDITION 1: INTRA-GROUP RPF ABSENT / INTER-GROUP RPF ABSENT n=21 Mean (Std. Dev)	CONDITION 2: INTRA-GROUP RPF PRESENT / INTER-GROUP RPF ABSENT n=24 Mean (Std. Dev)	CONDITION 3: INTRA-GROUP RPF ABSENT / INTER-GROUP RPF PRESENT n=21 Mean (Std. Dev)	CONDITION 4: INTRA-GROUP RPF PRESENT / INTER-GROUP RPF PRESENT n=24 Mean (Std. Dev)
Mean performance for all 9 rounds	28.67 (10.63)	23.25 (11.43)	28.19 (11.93)	30.96 (8.96)
Mean performance for first 3 rounds	8.62 (3.23)	8.58 (3.90)	9.14 (3.70)	10.42 (3.06)
Mean performance for middle 3 rounds	9.38 (4.26)	7.54 (4.05)	8.52 (4.13)	10.71 (3.66)
Mean performance for last 3 rounds	10.67 (4.17)	7.13 (5.21)	10.52 (4.78)	9.83 (4.04)

**PANEL B: CHANGE IN PERFORMANCE**

(Performance for last 3 rounds minus performance for first 3 rounds)

		INTRA-GROUP RPF	
		Absent	Present
INTER-GROUP RPF	Absent	2.05	-1.46
		3.20 n=21	4.91 n=24
	Present	1.38	-0.58
		2.62 n=21	4.36 n=24

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In addition, the mean performance for middle three rounds was marginally higher when intra-group RPF was present than when it was absent, whenever an inter-group RPF was present ( $t=-1.880$ ,  $p\text{-value}=0.067$ ). However, the mean performance for these three rounds did not differ between these conditions when inter-group RPF was absent ( $t=1.483$ ,  $p\text{-value}=0.145$ ).

The mean performance for the last three rounds was significantly lower when intra-group RPF was present than when it was absent ( $t=2.159$ ,  $p\text{-value}=0.034$ ). However, this relationship was significant when inter-group RPF was absent ( $t=2.529$ ,  $p\text{-value}=0.015$ ). However, the relationship was not significant when inter-group RPF was present. The mean performance for the last three rounds did not differ when intra-group RPF was present and when it was absent, whenever inter-group RPF was present ( $t=0.525$ ,  $p=0.602$ ).

Panel B of Table 3.1 (7) shows changes in performance in each condition. The change in performance was defined as performance for the last three rounds minus performance for the first three rounds. Results showed that performance increased more when both RPF was absent. On the other hand, participants reduced more their performance when only intra-group RPF was present.

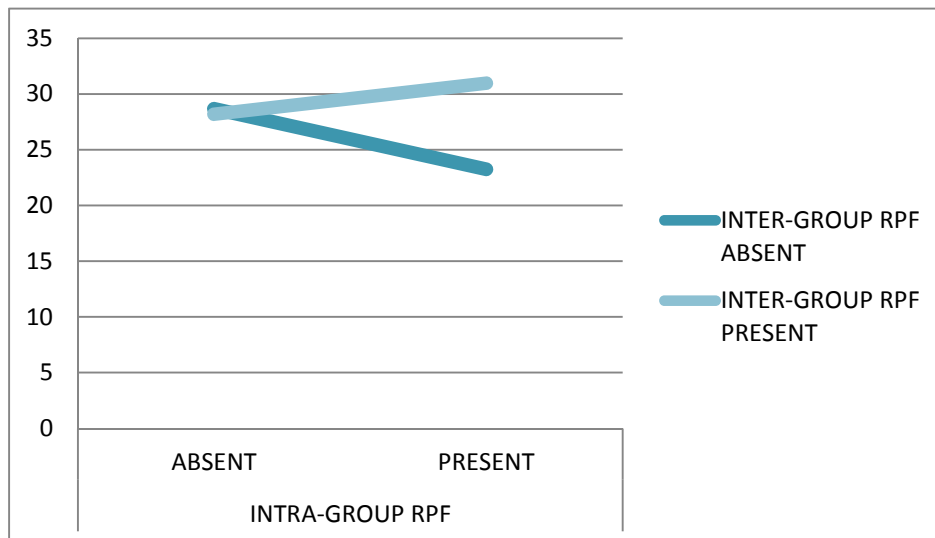
Individuals reduced their performance significantly more when intra-group RPF was present than when it was absent ( $t=3.406$ ,  $p\text{-value}=0.001$ ). Specifically, individuals reduced their performance when intra-group RPF was present and they increased it when it was absent. This happened when inter-group RPF was present and also when it was absent. However, when inter-group RPF was present the differences between the change in performance in intra-group RPF absent and present were only marginally significant ( $t=1.859$ ,  $p\text{-value}=0.071$ ). That is, the differences were more significant when inter-group RPF was absent ( $t=2.793$ ,  $p\text{-value}=0.008$ ).

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than when it was present. In addition, individuals increased their performance significantly more when only inter-group RPF was present than when only intra-group RPF was present ( $t=-2.462$ ,  $p\text{-value}=0.019$ ). Specifically, individuals reduced their performance when only intra-group RPF was present and they increased it when only inter-group RPF was present.

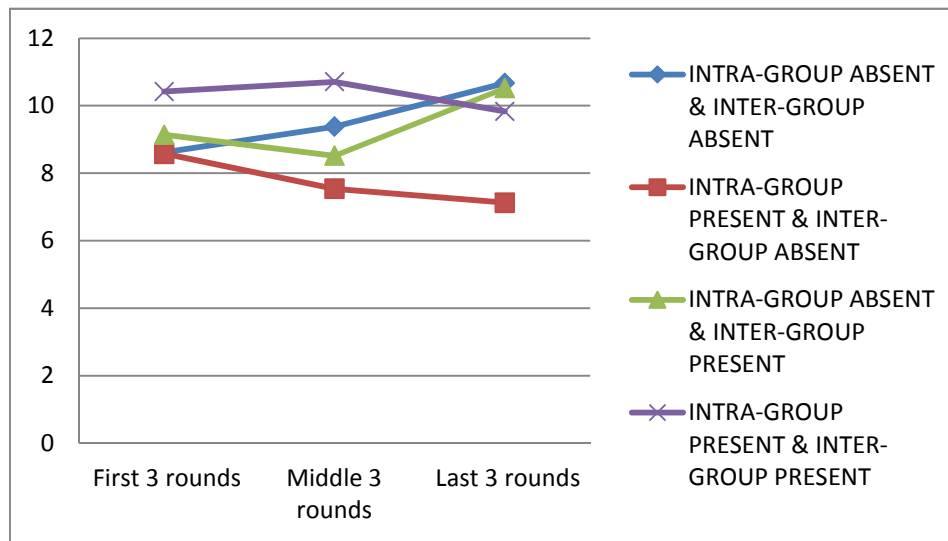
Altogether, the descriptive statistics suggest that inter-group RPF increase performance and that the effect of intra-group RPF on performance depends on if inter-group RPF is present or absent, which is consistent with my hypotheses.

**FIGURE 3.1 (2). Mean performance**



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**FIGURE 3.2 (3). Changes in performance**



#### **3.4.2. Hypotheses Tests**

In order to test my hypotheses I used an ANCOVA, which allows contrasting the direct and interactive effects of two or more independent variables simultaneously. I ran a factorial model with the manipulated variables as fix factors, and performance in the last six rounds as dependent variable. In addition, I included as covariate the performance in the first three rounds in order to control the ability of subjects in the task.

Results on Table 3.2 (8) show that there is a main effect of intra-group RPF ( $p$ -value=0.035), but there is not a main effect of inter-group RPF ( $p$ -value=0.607). Results also show a marginally significant interaction effect of these two factors ( $p$ -value=0.068). Furthermore, the results indicate that performance in the first three rounds has a significant effect on performance in the last six rounds. Therefore, my first hypothesis, which predicts that inter-group RPF will increase the performance, is not supported. On the other hand, as I predicted in hypothesis 2, there is a

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significant interaction effect. The second hypothesis predicts that the effect of intra-group RPF will be mitigated if an inter-group RPF is present too. The results show that performance in the last six rounds is significantly lower when only intra-group RPF is present than when both RPF is present ( $t=6.526$ ,  $p\text{-value}=0.014$ ).

**TABLE 3.2 (8). ANCOVA. Effects on individual performance**

	<b>Df</b>	<b>F</b>	<b>p-value</b>
Intercept	1	6.881	0.010
Performance in the first 3 rounds	1	57.669	0.000
Intra-group RPF	1	4.573	0.035
Inter-group RPF	1	0.266	0.607
Intra-group RPF * Inter-group RPF	1	3.414	0.068
Error	85		

The simple effects analysis (see Table 3.3 (9)) reveals that when inter-group RPF is absent, individual performance is significantly lower when individuals received information about the performance of their fellow (intra-group RPF was present) ( $F=4.463$ ,  $p\text{-value}=0.040$ ). However, when inter-group RPF is present, there is not significant differences between when intra-group RPF is present and it is absent ( $F=0.424$ ,  $p\text{-value}=0.519$ ). These results indicate that the negative effect provoked by an intra-group RPF is mitigated when the information provided for this RPF is



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complemented with other about the performance of the other teams. Therefore, these results support the second hypothesis.

**TABLE 3.3 (9). Simple effects analysis**

<b>Source</b>	<b>Df</b>	<b>F</b>	<b>Sig.</b>
Effect of Intra-group RPF when Inter-group RPF is absent	1	4.463	0.040
Effect of Intra-group RPF when Inter-group RPF is present	1	0.424	0.519

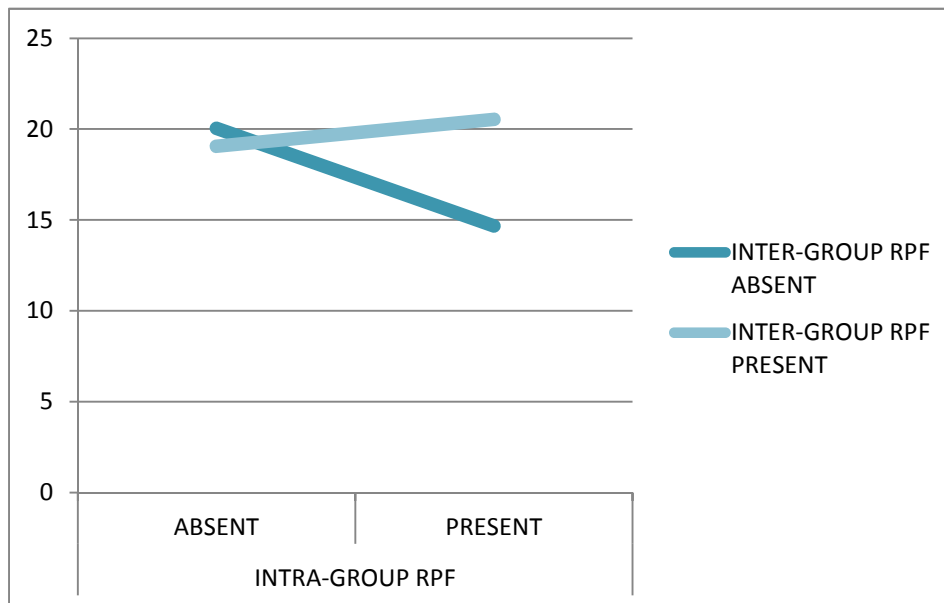
**3.4.3. Supplemental Analysis**

**A) Contrast coding**

In order to extend the analysis of my results I complement the conventional ANOVA with a contrast coding in order to test whether there is any condition different from the other conditions. ANOVA indicates whether cell means are different from one another, but it does not specify the source of differences among means (Buckless & Ravenscroft, 1990). Buckless & Ravenscroft (1990) proposed that researchers should use contrast coding instead of conventional ANOVA when means involve nonsymmetrical patterns such that the effect is due to the difference of one experimental cell from the other three cells, which are approximately equal.

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**FIGURE 3.3 (4). Mean performance in the last 6 rounds**



**TABLE 3.4 (10). Contrast test**

	T	P-value
Contrast test	2.694	0.008

Figure 3.3 (4) shows a pattern that we can identify with the pattern described by Buckless & Ravenscroft (1990). Only when inter-group RPF is absent and intra-group RPF is present, the performance of the last six rounds appears different from the other conditions. Thus, in order to test whether the subjects performed less when only they received information about other members of their group than in other conditions I carried out a contrast coding. Specifically, I used contrast coefficients of -3 for intra-

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group RPF present and inter-group RPF absent condition and +1 for the other three conditions (intra-group RPF absent and inter-group RPF absent; intra-group RPF absent and inter-group RPF present; intra-group RPF present and inter-group RPF present). The results of this analysis are shown in Table 3.4 (10). These results show that subjects perform significantly less when only information about other members of their group is provided than in another condition analyzed in this study ( $t=2.694$ ,  $p\text{-value}=0.008$ ).

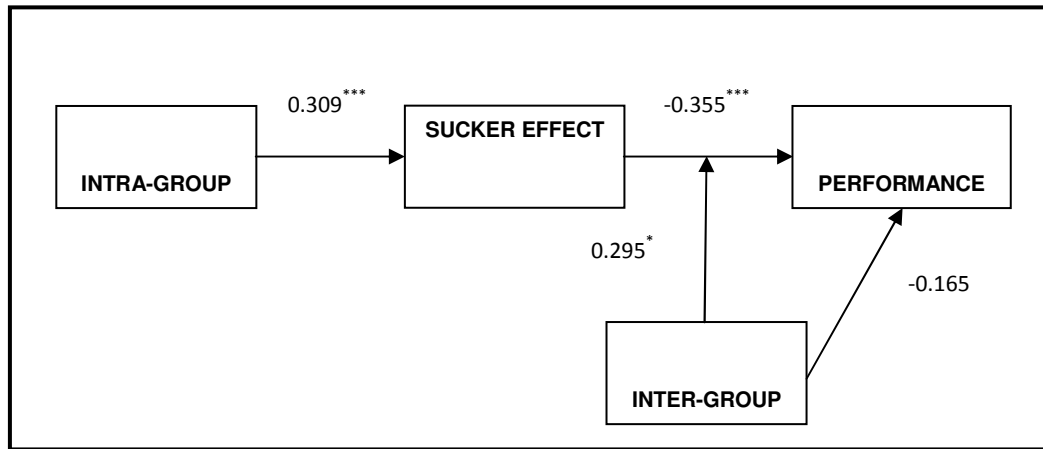
#### **B) Tests of Causal Model**

I used Partial Least Square (PLS) technique in order to establish that the H1 and H2 results are due to the process described by my theory. My theory states that an inter-group RPF will have a positive effect on individual performance. Also, it states that when individuals perceive or know that their teammates are behaving as free-rider, they could feel that they are played a sucker role. I propose that the effect of this feeling on individual performance will depend on the presence of an inter-group. I measured the sucker role feeling by several indicators, thus PLS is suitable, since it is used for the estimation of models involving latent constructs measured by this way (Naranjo-Gil, 2009). PLS focuses on explaining variances of dependent variables and it is similar to ordinary squares regression with regard to output and assumptions (Naranjo-Gil, 2009).

Figure 3.4 (5) and Table 3.5 (11) show the path coefficients in the structural model and the significance of the standardized  $\beta_s$ , based on bootstrapping procedure (Naranjo-Gil, 2009).

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**FIGURE 3.4 (5). Causal Model**



\*\*\* Significant at 0.001

\* Significant at 0.1

**TABLE 3.5 (11). Path coefficients**

	Sucker effect	Performance
Three first rounds		0.604
Inter-group RPF		-0.165
Intra-group RPF	0.309	
Sucker effect		-0.355
Sucker effect*Inter-group RPF		0.295

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The dependent variable was performance, which was measured by the number of problems solved correctly in the last six rounds. In a similar way that in the test of hypotheses, I controlled the ability of participants by the numbers of problems solved correctly in the first three rounds.

To measure sucker effect, subjects indicated their agreement with five items using a five-point Likert scale (these items are provided in Appendix 3.1). In order to assess the validity of the measurement I used a reliability and factorial analysis (Table 3.6 (12)), in addition to PLS technique.

**TABLE 3.6(12). Factorial analysis I**

	<b>Item1</b>	<b>Item2</b>	<b>Item3</b>	<b>Item4</b>	<b>Item5</b>
<b>Commonality</b>	0.413	0.546	0.760	0.592	0.786
<b>Cronbach Alpha</b>	0.839				
<b>Explained variance</b>	61.95%				

These analyses showed a high value of Cronbach's Alpha (0.839) and also of the explained variance (61.95%). However, I found an item with a low value of commonality (Item 1=0.413), which suggest that should be suitable to eliminate this item. The results of PLS technique suggested eliminating this item too, because its loading was lower than 0.7 (0.570). I repeated the process without Item1. The results are shown in the Table 3.7 (13). Cronbach's Alpha was 0.848 and it was explained 69.39% of the variance.

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**TABLE 3.7 (13). Factorial analysis II**

	<b>Item2</b>	<b>Item3</b>	<b>Item4</b>	<b>Item5</b>
<b>Commonality</b>	0.560	0.804	0.568	0.844
<b>Cronbach's Alpha</b>	0.848			
<b>Explained variance</b>	69.39%			

Furthermore, I assessed for discriminant validity of the measurement model by calculating the Average Variance Extracted (AVE) and by comparing this with the squared correlation between constructs (Naranjo-Gil, 2009). Discriminant validity was satisfactory because the AVE's were higher than the correlations (Naranjo-Gil, 2009).

The model confirms that individuals showed a sucker effect in higher extent when intra-group RPF was present (Link 1:  $t=3.366$ ,  $p\text{-value}<0.001$ ). This higher sucker effect, as I predicted, had as consequences a lower individual performance (Link2:  $t=3.408$ ,  $p\text{-value}<0.001$ ). However, this negative effect was marginally moderated by inter-group RPF (Link 4:  $1.376$ ,  $p\text{-value}<0.1$ ). On the other hand, results did not show a relationship between inter-group RPF and performance. In the next section, I provide a reason which could explain this unexpected result.

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**C) Explanation for unsupported hypothesis**

Both economic and psychology theories suggest that the effect of RPF depends on how feedback affects perceptions of individuals' relative position (Hannan et al., 2008). When individuals perceive goals as unattainable, they do not try to meet them (Locke & Latham, 1990), resulting in lower performance (Hannan et al., 2008). Then, the effect of inter-group RPF could depend on the likelihood of individuals to attain their goals, in this case, to achieve a favorable comparison relative to other teams. Therefore, in this section I analyze the effect of inter-group RPF, but controlling the difference between the teams' performance.

In order to test this effect, I calculated the difference between each team performance and the performance of the team that was in the first place: distance 1 (difference in the three first rounds), distance 2 (difference in the middle three rounds) and distance 3 (difference in the first six rounds). I ran a factorial model in which the fix factor was inter-group RPF variable and the dependent variable was performance in the last six rounds. In addition, I included the three news calculated variables as covariate. Table 3.8 (14) shows the results. Results showed that inter-group RPF had a significant effect on performance, such as the performance was higher when inter-group RPF was present.

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**TABLE 3.8 (14). Effect of inter-group RPF on individual performance**

	<b>Df</b>	<b>F</b>	<b>p-value</b>
Intercept	1	282.796	0.000
Distance 1	1	4.691	0.033
Distance 2	1	1.925	0.169
Distance 3	1	4.366	0.040
Inter-group RPF	1	4.669	0.034
Error	85		

In order to complement these results, I analyzed the effect of inter-group RPF every time participants received the information. That is, I analyzed the effect of inter-group PRF on individual performance in the next three rounds, taking into account the distance between the teams' performance. Tables 3.9 (15) and 3.10 (16) show the results.

**TABLE 3.9 (15). Effect of inter-group RPF on individual performance in the middle 3 rounds**

	<b>Df</b>	<b>F</b>	<b>p-value</b>
Intercept	1	264.395	0.000
Distance 1	1	14.645	0.000
Inter-group RPF	1	9.586	0.003
Error	87		



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**TABLE 3.10 (16). Effect of inter-group RPF on individual performance in the last 3 rounds**

**PANEL A: Controlling for the distance on performance in the middle 3 rounds**

	<b>Df</b>	<b>F</b>	<b>p-value</b>
Intercept	1	277.437	0.000
Distance 2	1	26.180	0.000
Inter-group RPF	1	2.399	0.125
Error	87		

**PANEL B: Controlling for the distance on performance in the first 6 rounds**

	<b>Df</b>	<b>F</b>	<b>p-value</b>
Intercept	1	233.825	0.000
Distance 3	1	19.213	0.000
Inter-group RPF	1	6.760	0.011
Error	87		

When the distance on performance in the first three rounds was included as covariate, results showed a positive significant effect of inter-group RPF in the performance over the following three rounds. On the other hand, the effect of inter-group on performance of the last three rounds was significant when it was controlled the distance on performance in the first six rounds.

Altogether, these results could suggest an explanation about why I did not find a direct effect of inter-group RPF. Although inter-group comparison could encourage a positive effect on performance, it may have been

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compensated by the negative effect that inter-group RPF could have in individuals who perceive to meet their goals as unattainable.

### **3.5. Discussion and Conclusions**

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In this study, I tried to extend our knowledge about how the design of management information can affect to dysfunctional behaviors. Specifically, this study analyzed how relative performance feedback can influence people reaction to dysfunctional behaviors of their teammates. Results from this study can help accountants to understand the role of feedback in improving performance.

When individuals perceive that other team members are behaving as a free-rider, they would reduce their effort. This happens because individuals may fear that other team members take advantage from their contributions. However, psychology researchers (Wegge & Haslam, 2005; Williams & Karau, 1991) found that there are some circumstances under which individuals would increase their effort when they perceive or know that other team members perform insufficiently (social compensation). Two factors are necessary for social compensation occurs. First, individuals must perceive that their team members are performing insufficiently. This information could be provided by an intra-group RPF, which reports information about the team members' performance. However, this is not sufficient to produce the social compensation effect. In addition, it is also necessary that individuals value the team performance. An inter-group RPF facilitates comparison between teams. Then, since individuals' value achieve favorable comparisons; inter-group RPF could increase the value of team performance for individuals.

Results from this study show that when both intra-group and inter-group RPF are present, the performance is higher than when only intra-group

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RPF is present. This is consistent with my predictions based on that when intra-group and inter-group RPF are present, both factors which foster the social compensation effect are met. However, I did not find an increment in performance when both RPF are present, but a reduction in performance. Thus, my results show that when an inter-group is present, the negative effect that intra-group RPF produce in individual performance is mitigated. The desire of individuals to obtain favorable comparisons reduces the decline in performance that happens when individuals know the performance of their peers. That is, the presence of inter-group RPF mitigates the sucker effect which appears when intra-group RPF is present.

On the other hand, I found an unexpected result, inter-group RPF did not influence significantly on performance. An explanation for this result could be that the positive effect of inter-group RPF on performance could have been compensated by the negative effect that this feedback had in individuals who perceived that their goals were unattainable. In this vein, further research could be needed to extend our knowledge about how inter-group RPF affect performance.

The results of this study have also practical implications for organizations, which can motivate individuals when they work in teams by a suitable design of accounting information systems. This study can help organizations to lessen the negative impact that the sucker effect may have in organizational structures based on teams. At the same time, this study has several limitations such as the generalizability to real-world setting due to the methodology used. However, I do not expect that employees in organizations respond differently to my experimental manipulations, but they face other variables that may influence in their behaviors.

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## **Appendix**

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### **Appendix 3.1. Sucker effect questionnaire**

I adapt the instrument of Mulvey & Klein (1998). Subjects indicated their agreement with these items using a five-point Likert scale, ranging from 1 (nothing) to 5 (totally).

1. Because other group members are not contributing as much as they could I was not trying my best on this activity.
2. Because other group members are putting in less effort than they are able, I did not plan to continue to work hard on the activity.
3. Others in my group are not trying their best on this activity, so I was not trying my best either.
4. Because other group members are not trying as hard as they could, I was not working as hard as I could on this activity.
5. Because other group members are not trying as hard as they can, I reduced my effort on the activity.

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**Intra-group vs. Inter-group Relative Performance Feedback**



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**Intra-group vs. Inter-group Relative Performance Feedback**

## **CHAPTER 4: The effects of Perceived Fairness and Inter-group Relative Performance Feedback on Whistleblowing decisions**

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- 4.2. Hypotheses development**
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- 4.4. Results**
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### **References**

#### **4.1. Introduction**

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Unethical behaviors by employees may be difficult to control in organizations (Tannenbaum, 1968), since there are situations in which direct supervision cannot be possible (Trevino & Victor, 1992). Co-workers often acquire information about other agents that is not directly available to the principal (Fama & Jensen, 1983). Thus, they will be more likely than supervisors to be aware of unethical and opportunistic behaviors (Trevino & Victor, 1992; Zhang, 2008). Co-workers will play an important role in order to detect misconducts in organizations, such as fraud (Nitsch, Baetz & Hughes, 2005). In this vein, management should

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encourage employees to report unethical behavior internally (Mayer, Nurmohamed, Trevino, Shapiro & Schminke, 2013). Thus, it is important to analyze the factors that increase the likelihood that employees will report such behaviors internally (Mayer et al., 2013). In this study, I examine how the perceived fairness and inter-group RPF influence the peer reporting decision. Specifically, I analyze if individuals will be more willing to report peers' overstatement when they perceive their supervisor as fair rather than unfair, even though they are not rewarded for doing so. Furthermore, I analyze if this relationship depends on whether an inter-group RPF is present or not.

Individuals are not always willing to report peers' misconduct behaviors. Reporting on peers' misconduct behavior is an act that arouses diverse and conflicting opinion (Reuben & Stephenson, 2012). In the management literature we can find studies which show that individuals are willing to punish peers when they behave opportunistically (see Fehr & Gächter, 2000). Some motivations for reporting peer's overstatements could be the indignation feelings at observing lies (Reuben & Stephenson, 2012), dislike for disadvantageous inequality (Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999), or the competitive preferences (Fershtman & Weiss, 1998; Frank, 1985). On the other hand, research on whistleblowing effects has found that employees are generally reluctant to report such misconducts (Robertson, Stefaniak & Curtis, 2011) because they fear retaliation for reporting or believe such effort will be ineffective (Mayer et al., 2013; Mesmer-Magnus & Viswesvaran, 2005). In addition, some groups may oppose it for several reasons, such as: (a) because violates a moral obligational loyalty to the group and professional norms of autonomy and self-regulation (Graham, 1986; Swazey & Scher, 1981); (b) because members benefit from engaging in, or overlooking wrongdoing (Near & Miceli, 1985); and (c) because that exposure of wrongdoing may lead to lose their jobs (Greenberg, Miceli & Cohen, 1987).

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From an economic point of view, peer reporting could be encouraged by monetary incentives (Miceli, Near & Dworkin, 2009). If individuals are rewarded based on their peer's reporting, a wealth-maximizing individual will always prefer to blow the whistle on a misconducting peer (Zhang, 2008). On the other hand, when individuals are not rewarded based on their peer's reporting, economic theories predict that individuals never report on others because they are indifferent (Reuben & Stephenson, 2012). However, individuals are not only motivated by monetary incentives. Numerous studies have shown that individuals are also motivated by reciprocity (Hannan, 2005) and social comparisons (Luft & Shields, 2009). In this vein, this study analyzes how reciprocity and social comparison affect peer reporting decision when individuals are not rewarded for reporting peers misconduct.

Reciprocity theory states that individuals are willing to reward kind actions and punish unkind actions even though they incur a cost to do so (Hannan, 2005). Zhang (2008) analyzed how individuals' fairness perception of the principal affects the willingness to report others when individuals are rewarded by a peer reporting system (it provides a monetary reward for truthful whistleblowing). According to reciprocity theory, she argues that individuals will be less willing to blow the whistle when they perceive the principal as unfair rather than fair. The reason for that is that individuals who feel exploited by the supervisor are more likely to conduct similar acts as a mechanism to correct perceptions of inequity (Hollinger & Clark, 1983). In this study I try to extend Zhang's (2008) research by analyzing the effect of individuals' fairness perception of the principal on whistleblowing decisions when individuals are not rewarded for doing so. Specifically, I propose that individuals report peers' overstatement more likely when they perceived that have been treated fairly by their supervisor rather than unfairly, even when they do not receive any reward for peer reporting.

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On the other hand, individuals may be motivated by social comparisons too (Luft & Shields, 2009). An inter-group RPF facilitates the social comparison between teams. In inter-group situations, individuals have the desire to make favorable comparisons of one's own group against other out-groups (Hogg, 2000; Lount & Phillips, 2007; Tajfel & Turner, 1986). In this vein, several studies have found that inter-group social comparison can eliminate motivation loss (Erev, Bornstein & Galili, 1993; Harkins and Szymanski, 1989; Ouwerkerk & Ellemers, 2002; Worchel, Rothgerger, Day, Hart & Butemeyer, 1998). However, the peer's overstatement can increase the possibility to achieve favorable comparisons. Thus, I propose that, in order to try to obtain a positive comparison relative to other teams, individuals report peers' overstatement less likely when an inter-group RPF is present than when it is absent. In addition, I propose that the presence of an inter-group PRF will decrease the effect of individuals' perceive fairness on whistleblowing decision. When an inter-group RPF is present, individuals will be more focus on his relationship with the other teams rather than how they are treated by their supervisor (Kelly & Tan, 2010).

I tested my expectations in an experiment among 105 graduate students. I analyzed the actual peer reporting rather than the intentions to report. The meta-analysis of whistleblowing studies carried out by Mesmer-Magnus & Viswesvaran (2005) showed that the predictors of whistleblowing intentions are not necessarily the same as the predictors of actual whistleblowing (Miceli et al., 2009). Thus, I try to cover a research limitation on whistleblowing behavior, where authors measured the intention to blow the whistle rather than the actual whistleblowing (Mesmer-Magnus & Viswesvaran, 2005; Miceli et al., 2009).

In this experiment, a team member was given the opportunity to lie by overstating their results in order to receive a higher payoff and another team member observed the behavior of his/her teammate. Those

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individuals who observed overstating had the opportunity to report others. Individuals who were reported for overstating their results were sanctioned. However, individuals who report other did not receive any monetary reward from their action (Reuben & Stephenson, 2012). In this experiment, the independent variables were the individuals' fairness perception of the principal (low vs. high) and the inter-group PRF (present vs. absent).

Contrary my expectations, I did not find a significant effect of individuals' fairness perception of the principal on peer reporting decision. On the other hand, according to my expectations, the experimental results showed that individuals reported peer's overstatements in a lower extent when an inter-group RPF was present. Also, they showed that when individuals perceive their supervisor as fair, they will be more likely to behave in a reciprocal way, when inter-group RPF is absent rather than present. This result suggests that the peer reporting decision will be more driven by inter-group competition rather than reciprocity.

This study contributes to management accounting research by extending our knowledge about how different control systems influence employees' decisions about whether report internally or not unethical behaviors. In organizations, control systems are implemented together other control systems and organizational practices, thus examining the interactive effect of different control systems and organizational practices is an important issue to firms (Kelly & Tan, 2010). In this vein, this study analyzed the interactive effect of individuals' fairness perception and inter-group RPF. In addition, unlike Zhang's (2008) study I focused on a setting in which employees did not receive a monetary reward for whistleblowing because this is not common in practice (Towry, 2003). On the other hand, previous accounting literature has focused on how relative performance feedback influence on performance (Hannan, Krishnan & Newman, 2008; Hannan, McPhee, Newman & Tafkov, 2013; Murthy & Schafer, 2011; Tafkov, 2013).

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However, I try to show that not only it is important to analyze the effect of providing relative information on performance, but also to understand how this information could affect to other individual behaviors.

## **4.2. Hypotheses development**

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### ***4.2.1. Effect of individual's fairness perception on whistleblowing decision***

The individuals' fairness perception of the principal is an important determinant in the individuals' willingness to blow the whistle (Miceli, Near & Schwenk, 1991; Zhang, 2008). Employees who perceive that they are treated fairly by their employer are more likely to frame the relationship as based upon mutual social exchange, advancing behaviors intended to benefit the organization, such as whistleblowing (Seifert, Sweeney, Joireman & Thornton, 2010). They could believe that they owe something in return to the supervisor, and as a consequence they are motivated to engage in an extra-role behavior which benefits their supervisors (Trevino & Weaver, 2001). Thus, peer reporting could be seen as a behavioral response to the perception of fairness since it may be considered an additional task for the employee to help the management (Douhou, Magnus & Van Soest, 2012; Victor, Trevino & Shapiro, 1993). This response to the perception of fairness can be explained by the reciprocity theory.

Reciprocity theory states that people want to be nice to those who treat them fairly and want to punish those who hurt them (Fehr & Schmidt, 1999; Rabin, 1993). People engage in reciprocity even in the absence of any expectation of future interactions or material benefits because they have a social preference for being treated kindly (Hannan, 2005). Thus, people reward kind intentions and punish unkind intentions, even though

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it may be a cost to do so (Hannan, 2005). In this vein, Kelly & Tan (2010) and Hannan (2005) argue and find that employees who receive a larger profit-sharing or a higher wage from their firm would reciprocate with behaviors that benefit their firm even when those behaviors are not extrinsically rewarded or contractually enforceable.

Therefore, based on reciprocity theory, if employees perceive that they are being treated fairly, they should be more willing to benefit their organizations by engaging in extra-role behaviors (Seifert et al., 2010; Trevino & Weaver, 2001). Thus, when a team member overstates his result which has negative consequences for the organization, the teammates will be more willing to blow the whistle in order to help the organization when they perceive their supervisor as fair rather than unfair. That is, I propose a positive relationship between individual's perceive fairness of the principal and the likelihood that individuals report peers' overstatement.

*H1: Individuals will be more likely to report peers' overstatement when individuals perceive their supervisor as fair rather than unfair.*

**4.2.2. Direct and moderated effect of inter-group RPF on  
whistleblowing decision**

Economic theories assume that people compete for monetary rewards, however social comparison theory argues that people also compete for non-monetary rewards (Greenberg, Ashton-James & Ashkanasy, 2007; Smith, 2000). In addition, social comparisons not only occur between individuals but also between teams (Munkes & Diehl, 2003), since people not only compare themselves with others, but also compare the group to which they belong with other groups (Goethals & Darley, 1987; Williams & Karau, 1991).



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Inter-group settings encourage higher levels of competition (Lount & Phillips, 2007). The opportunity for inter-group comparison creates a “social competition” to see one’s own group as better than an out-group (Turner, 1975; Lount & Phillips, 2007). That is, when inter-group comparison is possible, people have the desire to make favorable comparisons of one’s group against other groups (Hogg, 2000; Lount & Phillips, 2007; Tajfel & Turner, 1986). An inter-group RPF provides information about the performance of different teams. This information facilitates inter-group comparisons since it allows individuals compare their own group performance to other groups. Thus, an inter-group RPF could encourage social competition among teams.

Several studies have found that inter-group settings can reduce the lack of motivation (Erev et al., 1993; Ouwerkerk & Ellemers, 2002; Worchel et al., 1998), since it encourages higher effort of team members in order to maintain a positive self-image (Beach & Tesser, 1995; Tesser, 1988) and promotes within-group collaborations (Baer, Leenders, Oldham & Vadera, 2010; Burton-Chellew, Ross-Gillespie & West, 2010). However, when a team member overstates his/her results, the likelihood to obtain favorable comparison relative to other teams increases. Thus, the higher within-group collaboration that inter-group competition encourages could motivate team members to cover their teammates. Therefore, in order to try to obtain a better position compared to other groups (Munkes & Diehl, 2003), I expect that individuals will be less willing to report peers’ overstatement when an inter-group RPF is present than when it is absent. Thus, I formulate the following hypothesis:

*H2: Individuals will be less likely to report peers’ overstatement when inter-group RPF is present rather than absent.*

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Finally, I consider whether the inter-group RPF could moderate the relationship between individual's fairness perception of the principal and whistleblowing decision. Based on Kelly & Tan (2010), I expect that introducing a feedback system that reports the teams' performance may increase the focus of individuals on the relationship of their group with other groups and shift their focus away from how they perceive their supervisor. Thus, when an inter-group RPF is present, the whistleblowing decision would be driven by the inter-group competition rather than the individual's fairness perception of the principal. That is, when individuals perceive their supervisor as fair, I expect that they will be more willing to report peers' overstatements when inter-group RPF is absent than when it is present.

*H3: Inter-group RPF will reduce the positive relationship between individuals' fairness perception and the likelihood of reporting peers' overstatement.*

### **4.3. Research Method: Experimental design**

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In order to test my hypotheses I used an experiment in which participated 105 graduate students from Pablo de Olavide University. The choice of such participants is due to the fact that it was not needed any specific knowledge or previous experience to carry out the task. Students participated in the experiment on a voluntary and anonymous way, and they gained real monetary rewards for their participation.

#### **4.3.1. Experiment design and task description**

In this experiment, the participants worked in groups of three people, in which one participant played the role of supervisor and the other two ones

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played the role of employee. These groups were formed randomly by the computer. Each session of this experiment consisted in eight periods. In each period each individual was matched with two new participants (Zhang, 2008). Participants were not repeatedly matched to avoid extraneous variables as explanations for the employees' behaviors (Zhang, 2008). The subject could not know the identity of the participants who formed their teams.

I used Z-Tree Software to program the task of this experiment (Fischbacher, 2007). The task that participants had to carry out depended on the role that they played. Although, there were two employees in the team, only one (Employee A) performed the task. The task was based on Gill and Prowse (2012), and it consisted of a screen with 48 sliders. Each slider was initially positioned at 0 and could be moved as far as 100. The team received a point for each slider that Employee A positioned exactly 50. They were allotted 2 minutes per period. In each period, after Employee A finalized the task, they received information about their results and then, they had to communicate how many points they had obtained. On the other hand, Employee B observed both the actual result obtained by Employee A as his/her reported result in each period. If employee A overstated his/her results, Employee B had the opportunity to ask that the Employee A will be revised. Finally, the task of the Supervisor was to choose which the employee B's reward was. Employee B knew which his/her wage was before to decide whether report or not peer's overstatement.

The reward of Employee A depended on the number of points that he/she had reported. The employees A was informed that the computer did not check whether the reported points matched the actual points that he/she obtained. The computer only checked this when Employee B decided that Employee A had to be revised. In the case that Employee B decided that Employee A had to be revised, Employee A's reward depended on the

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actual points that he/she obtained and not on the reported points, and he/she was fined. Specifically, the reward of Employee A was:

$$\text{Employee A's reward} = 1100 \text{ LECUS}^3 + V;$$

Where:

$$V = \begin{cases} 10 \times \text{Reported points,} & \text{if Employee B decided not to blow the whistle} \\ 10 \times \text{Actual points} - 800, & \text{if Employee B decided to blow the whistle} \end{cases}$$

The reward of Employee B was chosen by the Supervisor. That is, the reward of Employee B was fixed, it did not depend on his/her whistleblowing decision. The Supervisor chose a wage for Employee B which ranged between 650 LECUS and 1450 LECUS and Employee B knew it.

Finally, the Supervisor reward was determined by the results of the Employee A and the wages of both employees. Specifically, the reward of the Supervisor was:

$$\text{Supervisor's reward} = 3050 \text{ LECUS} + 15 \times \text{Actual points} - \text{Wage B} - \text{Employee A's reward};$$

#### ***4.3.2. Variable Manipulation and measurement***

The dependent variable of this study was the whistleblowing decision. I measured this variable in two ways. On one hand, I measured this variable as a dummy variable, which indicates whether the participant blew the whistle or not (Reuben & Stephenson, 2012). On the other hand, similar to Towry (2003) and Zhang (2008), I measured the dependent variable as

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<sup>3</sup> LECUS is the fictitious currency which was used in this experiment. At the end of the experiment, the total LECUS obtained was converted to EUROS (160 LECUS = 1 EURO).

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the percentage of whistleblowing (the number of times that the participant decided to blow the whistle divided by that the number of times that the participant had a teammate who overstated his/her results).

The independent variables of this experiment were the fairness perception and the inter-group RPF. The first one was measured by the wage that the principal chose to pay to agents in each period and by a question which was included in the post-experimental questionnaire (*QB6: Under which value do you consider your wage chosen by your supervisor as low?*). When the principal has the option of choosing a low or a high wage, a principal that chooses a high wage can be seen as giving a gift to the agents (the principal reduces its own wealth by giving a higher wage when it does not have to do) (Zhang, 2008). Thus, this action should be perceived as fairer than the selection of a low wage, since theories of social justice suggest that feelings of unfairness will arise if people perceive that they receive lower outcomes than others or lower outcomes that they expected (Grienberger, Rutte & Van Knippenberg, 1997). I considered that the wage was low when it was lower than the value that they answered in the question QB6 ( $WAGE < QB6$ ) and high when it was higher ( $WAGE \geq QB6$ ).

On the other hand, inter-group RPF was manipulated by providing or not to the participants information about the performance of their own team as well as about the performance of the rest of the teams in the session. In the case that inter-group RPF was absent, they did not receive information about other teams' performance.

#### **4.4. Results**

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In order to check if the chosen wage affected participants' fairness perception of the supervisor, I included two questions in the post-

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experimental questionnaire. Employees B were asked how fair their supervisor was when they chose a low (high) wage. Results showed that the participants' fairness perception was affected by the chosen wage. Participants considered fairer their supervisor when they provided them a high wage than when provided a low wage ( $t=-5.963$ ,  $p\text{-value}<0.001$ ). When inter-group RPF was absent, the mean fairness rating for the supervisor was significantly lower when the supervisor chose a low wage (1.95) than when chose a high wage (3.53) ( $t=-4.187$ ,  $p\text{-value}<0.01$ ). When inter-group RPF was present, I found the same result, the mean fairness rating for the supervisor was significantly lower when the supervisor chose a low wage (2.25) than when chose a high wage (3.69) ( $t=-4.213$ ,  $p\text{-value}<0.01$ ). Therefore, the wage chosen by the supervisor compared with the wage under which individuals consider as low wage was used as a measure of the participants' fairness perception of the supervisor. Specifically, I considered that the fairness perception was low when individuals received a low wage and high when they received a high wage.

**4.4.1. Descriptive Statistics**

In this experiment participated 105 subjects which repeated the same task during eight periods. Of these participants, 35 played the role of Employee B. They were the participants who had the opportunity to report peers' overstatements. However, Employee B only had this opportunity when the other employee of his/her group had overstated his/her result. Thus, I focused only on the observations in which the Employee A (who had the possibility to overstate his/her result) overstated his/her result. Employees B had the opportunity to blow the whistle 83 times.

Table 4.1 (17) reports the descriptive statistics for the mean wage, the number of times that was chosen a low (high) wage by the Supervisor, the number of times that Employees A overstated their results and the

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whistleblowing decision. Figure 4.1 (6) shows a graphical summary of the whistleblowing decision.

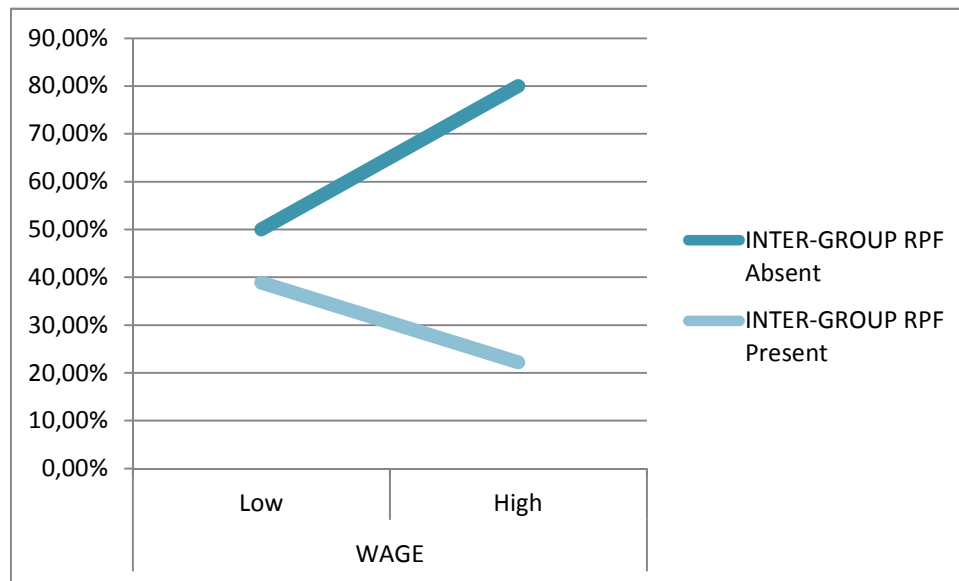
**TABLE 4.1 (17). Descriptive Statistics**

	INTER-GROUP RPF ABSENT			INTER-GROUP RPF PRESENT			TOTAL		
	Low wage	High wage	Total	Low wage	High wage	Total	Low wage	High wage	Total
<b>Mean wage (Std. Dev)</b>	721.48 (66.76)	1066 (214.07)	854.66 (220.39)	706.30 (78.37)	1061.62 (212.16)	852.08 (229.51)	714.50 (71.98)	1063.97 (209.80)	853.45 (223.34)
<b>% Chosen wage</b>	63.36% (27/44)	38.64% (17/44)	-	58.97% (23/39)	41.03% (16/39)	-	60.24% (50/83)	39.76% (33/83)	-
<b>Number of overstatements</b>	27	17	44	23	16	39	50	33	83
<b>% of Whistleblowing</b>	48.15% (13/23)	70.59% (12/17)	56.82% (25/44)	47.83% (11/23)	31.23% (5/16)	41.02% (16/39)	48% (24/50)	51.52% (17/33)	49.40% (41/83)

The mean wage chosen by the supervisors was 853.45 LECUS (SD=223.34). Specifically, when inter-group RPF was absent (present) the mean wage was 854.66 (852.08). There is not significant differences in the mean wage chosen by the supervisor when an inter-group RPF was present or absent ( $F=0.003$ ,  $p\text{-value}>0.1$ ). In addition, these differences are not significant regardless supervisor chose a high ( $F=0.004$ ,  $p\text{-value}>0.1$ ) or a low wage ( $F=0.547$ ,  $p\text{-value}>0.1$ ). Also, I did not find significant differences in the wages between the periods ( $F=0.708$ ,  $p\text{-value}>0.1$ ).

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**FIGURE 4.1 (6). Whistleblowing decision**



The descriptive statistics showed that the percentage of whistleblowing was higher when supervisor chose a high wage than a low wage, which is consistent with my first hypothesis. However, this happened only when inter-group RPF was absent. That is, this descriptive statistics showed that the effect of fairness perception depends on whether an inter-group RPF was present or not, such as I proposed in the third hypothesis. Consistent with my second hypothesis, the percentage of whistleblowing was higher when an inter-group RPF was absent than when it was present.

#### **4.4.2. Hypotheses test**

In order to test my hypotheses about the influence of perceived fairness and inter-group RPF on whistleblowing decisions, I carried out two different analyses. One in which the dependent variable was a dummy variable which indicates if individual  $i$  reported his/her peer for



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overstating the results in period z (A). And another one in which the dependent variable was the percentage of whistleblowing (B).

**A) Whistleblowing decision as a dummy variable**

In order to examine the effect of perceived fairness and inter-group on whistleblowing decision I ran a logit regression. The dependent variable indicated if individuals reported their peers for overstating their results (dummy variable). As independent variable I used: i) fairness perception: a dummy variable equal to one if the supervisor chose a high wage and zero when chose a low wage; ii) inter-group RPF: a dummy variable equal to one when inter-group RPF is present; and iii) an interaction term between i) and ii).

Results on Table 4.2 (18) show that there is a marginally significant effect of inter-group RPF (p-value=0.077), but there is not a main effect of fairness perception (p-value=0.793). Also, they show a marginally significant interaction effect of these two variables (p-value=0.081). These results do not support the first hypothesis, which predicts that fairness perception influence positively on whistleblowing decision. On the other hand, the hypothesis 2, which predicts that individuals blow the whistle in lower extent when inter-group RPF is present, is supported. In addition, as I predicted in hypothesis 3, there is a significant interaction effect.

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**TABLE 4.2 (18). LOGIT REGRESSION. Effects on whistleblowing decisions**

	<b>B</b>	<b>S. E.</b>	<b>Wald</b>	<b>df</b>	<b>p-value</b>	<b>Exp (β)</b>
Inter-group RPF	-0.838	0.474	3.135	1	0.077	0.432
Perceived Fairness	0.124	0.474	0.069	1	0.793	1.132
Inter-group RPF * Perceived Fairness	-1.651	0.947	3.039	1	0.081	0.192
Constant	-0.019	0.237	0.006	1	0.938	0.982

Hypothesis 3 predicts that the positive effect of perceived fairness on whistleblowing decision is mitigated when an inter-group RPF is present. The simple effects analysis shows that when supervisor choose a high wage, individuals decide to blow the whistle in a significant higher extent when inter-group RPF is absent than when it is present (p-value=0.028). I argued that when inter-group RPF is present individuals focus more on comparing their group with other groups than on how they are treated by the supervisor. In this vein, I expected that when individuals perceive that they are being treated fairly by their supervisor, they responded in a reciprocal way when inter-group RPF was absent, but not when it was present. Results showed that when individuals perceived their supervisor as fair, they were less willing to blow the whistle when inter-group RPF was present than when it was absent. The simple effects are shown in the Table 4.3 (19).

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**TABLE 4.3 (19). Simple effects**

	$\beta$	S.E.	Wald	df	p-value	Exp( $\beta$ )
Effect of perceived fairness when inter-group RPF is absent	-0.950	0.657	2.089	1	0.148	0.387
Effect of perceived fairness when inter-group RPF is present	0.701	0.682	1.058	1	0.304	2.017
Effect of inter-group RPF when perceived fairness is low	0.013	0.568	0.001	1	0.982	1.013
Effect of inter-group RPF when perceived fairness is high	1.664	0.758	4.821	1	0.028	5.280

**B) Whistleblowing decision as the percentage of whistleblowing**

In this analysis whistleblowing decision was measured as the percentage of whistleblowing (Towry, 2003; Zhang, 2008). Following Zhang (2008), I selected the Employees B who had overstating teammates both when they received a low wage and when they received a high wage (19 participants). I calculated two whistleblowing percentages for each of them: one for when supervisors chose a low wage and another for when they chose a high wage. The denominator of the percentage for the low (high) wage condition was the number of times that an Employee B had a teammate who overstated his/her result when he/she received the low (high) wage. The numerator was the number of times the employee B blew the whistle in that situation.

In order to test the hypotheses I ran a repeated-measure ANOVA. The results (see Table 4.4 (20), panel A and Figure 4.2 (7)) show that there

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was a significant direct effect of inter-group RPF (p-value=0.043), but there was not a main effect of fairness perception (p-value=0.603), and a marginally interaction effect of these factors (p-value=0.081).

**TABLE 4.4 (20). REPEATED-MEASURE ANOVA. Effects on  
whistleblowing percentage**

**PANEL A: MAIN EFFECTS**

	<b>df</b>	<b>F</b>	<b>p-value</b>
Fairness perception	1	0.281	0.603
Inter-group RPF	1	4.784	0.043
Fairness perception * Inter-group RPF	1	3.439	0.081
Error	17		

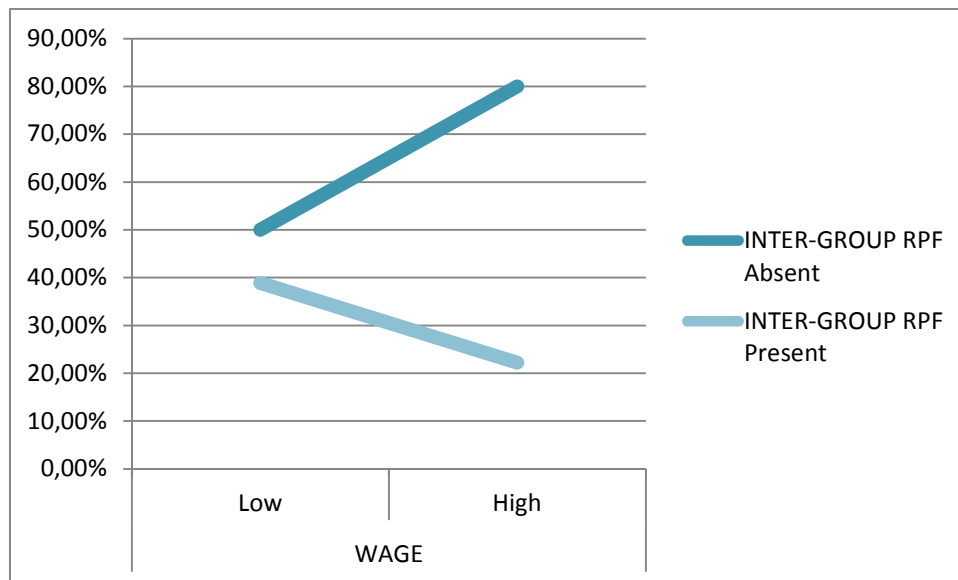
**PANEL B: SIMPLE EFFECTS**

	<b>Df</b>	<b>F</b>	<b>Sig.</b>
Effect of Fairness perception when inter-group RPF is absent	1	5.062	0.051
Effect of Fairness perception when inter-group RPF is present	1	0.571	0.471
Effect of inter-group RPF when fairness perception is low	1	0.256	0.620
Effect of inter-group RPF when fairness perception is high	1	10.123	0.005

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Therefore, I did not find support for the hypothesis 1, which predicts a positive effect of fairness perception on the likelihood of whistleblowing. On the other hand, consistent with the second hypothesis, my results showed that the percentage of whistleblowing was significantly lower when inter-group RPF was present than when it was absent. Therefore, the second hypothesis was supported.

**FIGURE 4.2 (7). Percentage of whistleblowing**



In addition, I found support for hypothesis 3 in this analysis also. The percentage of whistleblowing was significantly higher when the supervisor choose a high wage and an inter-group RPF was absent rather than present ( $p\text{-value}=0.005$ ). This result suggested that, in spite of individuals perceived that they were treated fairly by their supervisor,

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they blow the whistle in lower extent when inter-group RPF was present than when it was absent.

Simple effects analysis (see Table 4.4 (20), Panel B) revealed that when inter-group RPF was absent, the percentage of whistleblowing was significantly higher when the perceived fairness was high than when it was low ( $p\text{-value}=0.051$ ). However, when inter-group RPF was present, there was no significant difference between when the perceived fairness was high or low ( $p\text{-value}=0.471$ ). These results indicated that the positive effect that the fairness perception had on the whistleblowing decision when inter-group RPF was absent, it was mitigated when an inter-group RPF was present.

Altogether, both analyses suggested that there was a significant interaction effect of perceived fairness and inter-group RPF on the whistleblowing decision. Consistent with my third hypothesis, in spite that individuals perceived that they were treated fairly, they blow the whistle less when an inter-group RPF was present than when it was absent. Relative to main effects, both analyses did not support hypothesis 1. There was not a significant positive relationship between fairness perception and whistleblowing decision. The simple effects analysis of my second analysis showed that this relationship was positive and significant only when inter-group RPF was absent. On the other hand, the main effect predicted by hypothesis 2 (inter-group RPF main effect) was supported by both analyses.

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**4.4.3. Supplemental analysis**

**A) Employee A behavior**

According to the social comparison theory, I would expect that when inter-group RPF is present, Employees A will exert a higher effort or that they will be more willing to overstate their results in order to achieve a favorable comparison relative to other teams. In this section, I analyze these expectations. Table 4.5 (21) shows some descriptive statistics about Employee A behavior.

**TABLE 4.5 (21). Employee A behavior**

	INTER-GROUP RPF ABSENT			INTER-GROUP RPF PRESENT			TOTAL		
	Low wage	High wage	Total	Low wage	High wage	Total	Low wage	High wage	Total
<b>Mean effort (Std. Dev)</b>	16.15 (7.78)	17.52 (7.74)	16.74 (7.77)	17.36 (9.06)	18.64 (11.61)	17.95 (10.29)	16.69 (8.36)	18.06 (9.75)	17.29 (9.01)
<b>Mean Honesty</b>	93.60%	92.85%	93.28%	88.18%	91.55%	89.69%	91.20%	92.25%	91.66%
<b>% Overstate</b>	31.03% (27/87)	26.15% (17/65)	28.95% (44/152)	33.33% (23/69)	27.12% (16/59)	30.47% (39/128)	32.05(50/156)	26.61 (33/124)	29.64% (83/280)
<b>Mean Overstatement (Std. Dev)</b>	7.93 (6.46)	9.12 (9.70)	8.39 (7.78)	13.74 (13.89)	11.50 (12.44)	12.82 (13.19)	10.60 (10.83)	10.27 (11.00)	10.47 (10.83)

Unlike what social comparison theory could predict, I did not find that the effort of the participants was significantly higher when inter-group RPF

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was present than it was absent ( $F=1.266$ ,  $p\text{-value}=0.261$ ). However, rather than to increase their effort, in order to obtain a positive comparison relative to other groups, individuals may be more willing to overstate their results. In order to test this, I focused on the honesty in performance reporting, the percentage of people who overstate their results and the mean overstatement.

Honesty was measured as “ $1 - \text{Overstatement} / \text{Overstatement Available}$ ” (Evans, Hannan, Krishnan & Moser, 2001). Individuals were less honest (near to significant) when inter-group RPF was present than when it was absent ( $F=2.580$ ,  $p\text{-value}=0.109$ ). The difference in honesty was significant between inter-group RPF present versus absent when the wage chosen by the supervisor was low ( $F=3.335$ ,  $p\text{-value}=0.070$ ). It could be explained because Employee A could think that Employees B would be less willing to peer reporting when the supervisor chose a low wage. However, this explanation did not make sense in my experiment, because Employee A did not know which the wage chosen by the supervisor was.

On the other hand, I did not find any significant differences between the percentage of people who overstate their results when inter-group RPF was absent vs. present ( $W=0.077$ ,  $p\text{-value}=0.781$ ). However, consistent with the social comparison theory, I found that when individuals overstated their results, they did it in a significant higher extent when inter-group RPF was present than when it was absent ( $F=3.571$ ,  $p\text{-value}=0.062$ ). However, like it happened with honesty in performance reporting, the significant differences in individual's overstatements between inter-group RPF absent vs. present only happened when the supervisor chose a low wage ( $F=3.780$ ,  $p\text{-value}=0.058$ ).

An explanation for this unexpected result could be that Employees A believed that their peers are not going to report them to the Supervisor. Employees A could think that their peers are not going to report them



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when they observed in previous periods that other Employees B did not do it. According to this, I found that individuals' overstatements were significant higher when inter-group RPF was present than when it is absent, but only when individual observe that Employee B did not peer report in the previous period ( $F= 5.346$ ,  $p\text{-value}=0.024$ ). Related to this, in the post-experimental questionnaire, individuals answer the question: *Did my expectation about whether Employee B will peer reporting or not influence on my decision about overstating or not my results?* (scale range from 1 to 5). The participants' mean response for this question was 3.94 ( $SD=1.51$ ), significantly differ from the midpoint of 3 ( $t=3.685$ ,  $p\text{-value}=0.001$ ). Thus, these results suggested that individuals would overstate their results more when inter-group RPF was present according to the social comparison theory, when they believed that their peers were not going to report this behavior to the supervisor. Therefore, an explanation for this unexpected result could be that it would be more likely when individual think that Employee B is not going to peer reporting. As the Employees A, the Supervisor could think that the Employee B is not going to report peers' overstatement if they observed this in other Employees B in the previous period. However, the results do not support this explanation. The previous decision about peer reporting did not have a significant influence on the wage chosen by the supervisor ( $W=0.457$ ,  $p\text{-value}=0.499$ ).

#### **4.5. Discussion and Conclusions**

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This study tried to extend our knowledge about the factors which affect the likelihood that individuals report unethical behaviors internally (internal whistleblowing). In a setting in which individuals are not rewarded based on their report about peers' behaviors, a wealth-maximizing individual never reports others because they are indifferent to

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outcomes others (Reuben & Stephenson, 2012). However, individuals are not only motivated by monetary incentives. Numerous studies have shown that individuals are also motivated by reciprocity (Hannan, 2005) and social comparisons (Luft & Shields, 2009). In this vein, this study analyzed the effect of individuals' fairness perception of the supervisor and inter-group RPF on peer reporting decision even though individuals are not rewarded for doing so.

The results of this study generally support hypotheses 2 and 3, which predict a negative effect of inter-group RPF and an interaction effect of fairness perception and inter-group RPF on whistleblowing decision respectively. However, they did not support hypothesis 1, which predicts that individuals' fairness perception of the supervisor affect positively to whistleblowing decisions. These results suggest that individuals in order to achieve a favorable comparison relative to other teams, will be less willing to report peers' overstatements when inter-group RPF is present than when it is absent . Furthermore, when individuals perceive that are being treated fairly by their supervisor, they will be less likely to behave in a reciprocal way when inter-group RPF is present. The results show that when individuals perceive they have been treated fairly by their supervisor, they report in lower extent peers' overstatement when inter-group RPF is present than when it is absent. In addition, results suggest that only when inter-group RPF is absent, individuals will help more the organization by whistleblowing when they perceive that are treated fairly by the supervisor rather than unfairly (simple effects, second analysis).

In addition, results show that, according to the social comparison theory, individual overstatements will be higher when an inter-group RPF is present rather than absent. However, this will happen when individuals believe that their peers are not going to report to the supervisor their behavior. On the other hand, I found that the individual overstatements were significantly higher when inter-group RPF was present than it was

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absent, whenever the supervisor chose a low wage. This could be explained by what the Supervisor believes about whether Employee B is going to peer reporting or not. Therefore, I could expect that it will be more likely that the Supervisor chose a low wage when the Employee B did not report in the previous period. However, the results did not support this explanation.

Most of the studies about RPF focus on the effects on performance (e. g. Hannan et al., 2008; 2013; Murphy & Schafer, 2011; Taftkov, 2013). However, it is not only important to understand how inter-group RPF affect performance, but also it is important understand how this information may affect other individual behaviors. In this vein, this study analyzed the effect of RPF (inter-group RPF) on whistleblowing decisions. In addition, due to the fact that control systems are implemented together other control systems or organizational practices, it is important to analyze the interactive effect of different control systems and organizational practices (Kelly & tan, 2010). This study contributed to this issue by examining the interactive effect of inter-group RPF and individuals' fairness perception of the supervisor. I analyzed the individuals' fairness perception of the principal since it plays an important role in whistleblowing decision (Miceli et al., 1991; Zhang, 2008).

On the other hand, this study has several limitations which should be noted. As Zhang's (2008) study, I assume that employees can perfectly observe each other, however in practice, employees only be able to imperfectly observe them. Another limitation of this study is the reduced sample size. Thus, future research could replicate the experiment with a bigger sample. In addition, similar to Zhang (2008), the fairness perception in this study is based on how fair individuals perceive the wage provided by their supervisor. However, individuals' fairness perception of the supervisor could be based on interpersonal relationships. Thus, future research could extend this issue. Finally, in this study, I only focus on the

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relationship between the employee who has the opportunity to peer reporting and the supervisor. I have not taken into account the relationship between this employee with his/her peer and the relationship between the employee who overstate his/her result and the supervisor. In this vein, future research could extend this study by analyzing: (1) if it matter whether the supervisor is fair towards the employee who engaged in the misconduct; and (2) if it matter how the relationship is between the potential whistleblower and his/her peer.

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## CHAPTER 5: Conclusions

### 5.1. Summary and conclusions

### 5.2. Contributions

### 5.3. Limitations and future research

### References

### 5.1. Summary and conclusions

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This dissertation analyzes how management control system design influences dysfunctional behaviors. I performed three studies, where I analyzed how individuals behave under a specific design of management control systems. I also examined how individuals behave when they perceive peers' misconduct.

My first study examined how individual cognitive orientation affects the honesty in performance reporting. In addition, it analyzed whether the management control system design moderates this relationship. Results showed that individuals who had a predominant individualist cognitive orientation were more dishonest when they reported their results. In addition, I found that individualists were more dishonest under a boundary control system. Previous literature suggested that when individuals remind the standards of behaviors and compare them with their own behavior, they report their results more honestly (Mazar, Amir

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& Ariely, 2008). However, my results showed that when these standards of behaviors are reminded by a restrictive control system, such as boundary system, they have negative consequences for individuals' honesty. This negative effect happened when individuals had a predominant individualist cognitive orientation.

My second study analyzed how the information included in a relative performance feedback (RPF) influenced individual performance when they were rewarded by a group performance-based system. Specifically, I analyzed the effect of an intra-group versus inter-group RPF on individual performance. Results showed that intra-group RPF influences negatively to individual performance. An intra-group RPF could reveal shirking from some peers (Coletti, Sedatole & Towry, 2005), and as a consequence, when individuals are rewarded by a group incentive system, they reduce their effort in order to avoid to be a sucker (Kerr, 1983; Schnake, 1991). However, results showed that this negative effect was mitigated when an inter-group RPF was present. Thus, we can conclude that in order to achieve favorable comparison relative to other teams, individuals will be willing to compensate for free-riding of other team members.

The third study examined the effects of perceived fairness and inter-group RPF on whistleblowing decisions when individuals observed dishonesty in performance reporting. Specifically, I analyzed these effects when individuals did not receive any reward for whistleblowing. I did not find a direct relationship between fairness perception and whistleblowing decision. Results suggested that when individuals perceived their supervisor as fair, their decision about whistleblowing depended on whether an inter-group RPF was present or not. Results showed that when individuals perceive their supervisor as fair, they were more likely to behave in a reciprocal way (by reporting peers' overstatements) when inter-group RPF was absent rather than present. In addition, I found that individuals, in order to achieve a favorable comparison relative to other

teams, were less likely to report peers' overstatement when an inter-group RPF was present rather than absent.

In conclusion, the three studies show that individuals do not behave as opportunistically as economic theories predict. Individuals are not only motivated by monetary incentives, but also they are motivated by social preferences, as it is suggested in previous research (Birnberg, 2011). Therefore, when a management control system is designed, it is key to take into account this issue. In this vein, this dissertation shows that an important social preference for individuals is the social comparison. In spite they do not receive any reward for doing so, individuals will behave in order to meet a positive comparison relative to others. In addition, it is shown that individual decisions will be driven in a higher extent by social competition than by reciprocal motives.

Furthermore, it is important to note that a management control system design not always have the same consequences. It could motivate the opposite desired behavior in some individuals. Therefore, this dissertation suggests that when management control systems are designed, it is not only important to take into account the social preferences, but also the individual cognitive orientation.

### **5.2. Contributions**

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This dissertation contributes to the management accounting literature in several ways. First, the results of my three studies show that individuals are not only motivated by monetary incentives, but also they value social preferences. Specifically, in this dissertation has been highlighted the importance of social comparison on individual behaviors when they perceive peers' dishonest behaviors. In this vein, this study extends existent evidence about how individual behaviors are motivated by factors

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different to conventional monetary incentives and suggests that it is needed to consider such factors in management control systems design.

Second, this dissertation extends the previous literature by analyzing not only the antecedents of dysfunctional behaviors, but also by analyzing how individuals behave when they observe peers' dishonest behaviors. Specifically, I provide evidence about whether individuals follow their peers or whether they will be willing to cover them. In this vein, it is highlighted the importance that inter-group social comparison plays in this issue. Gino, Ayal & Ariely (2009) state that peer influence is an important factor in dishonest behaviors. This dissertation shows that the effect of the behavior of one particular individual on other individual behavior is going to depend on management control system design. Specifically, it is suggested that it depends on relative performance feedback design.

Related to the decision about covering peers or whistleblowing, research on this issue has found that employees are generally reluctance to report peers' misconduct (Robertson, Stefaniak & Curtis, 2011). However, there exist some motivations which could encourage that individuals report peers' opportunistic behaviors (Reuben & Stephenson, 2012). This dissertation provides evidence about the motivations which could or could not encourage individuals to peer reporting.

Third, this dissertation contributes to management accounting research by analyzing the interactive effects of control systems with other control systems; organizational practices; or individual cognitive orientation. In organizations, control systems are implemented together other control systems and organizational practices (Kelly & Tan, 2010). Thus, it is important to understand how a control system influences on individual behaviors when other control system is present or in conjunction with a specific organizational practice. In this vein, this dissertation analyzes the

interactive effect of intra-group and inter-group RPF; and the interactive effect of inter-group RPF and individual's perceived fairness. In addition, due to the fact that the management control systems could be perceived differently by individuals (Tessier & Otley, 2012), I provide evidence about the interactive effect of management control system (beliefs versus boundary control system) and individualist cognitive orientation.

This dissertation also has implications for management in practice. Management control systems are able to motivate behaviors in individuals towards organization's goals (Henri, 2006; Naranjo-Gil & Hartmann, 2007). For organizations, therefore, it is key to understand the effects of management control systems. In this vein, this dissertation provides evidence about when some management control designs will have a positive or negative effect on individual behaviors. Therefore, the results of this dissertation could help managers to design suitable management control systems in order to motivate individuals to follow organization's goals.

### **5.3. Limitations and future research**

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This dissertation has some limitations which should be noted. Related to the empirical methodology used to test my hypotheses a limitation is the generalizability of the results to real-world setting. However, I do not expect that individuals in organizations respond differently to my experimental manipulations, but it is important to note that they face other variables that may influence in their behaviors. Thus, the limitation may encourage new research avenues.

Regarding the limitations of my first study I note the following limitations. First, when I manipulated boundary system in the experiment, I did not include any sanction for the non-compliance of the rules set in such

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system. A boundary system could be ineffective when there are not credible sanctions (Coleman, 1990). Thus, future research could analyze the effect of boundary system on honesty in performance reporting when it is implemented with credible sanctions. Second, Tessier & Otley (2012) state that positive and negative control are opposing forces that need to coexist in order to ensure effective control. Therefore, it is important to analyze the effect of boundary and beliefs systems implemented together. Finally, this study focused on the effects of cognitive orientation and management control system design in an individual environment. Future research should analyze if the results are the same in other environment, such as team-based organizations.

On the other hand, my second study focused on analyzing the effect of intra-group versus inter-group RPF on individual behaviors. However, other aspects relative to the content of relative performance feedback could influence in this relationship. In this study I found an unexpected result, inter-group RPF did not have a direct effect on individual performance. A plausible explanation is that the positive effect of an inter-group RPF on individual performance could have been compensated by the negative effect that this feedback could have in those individuals who perceived to obtain a favorable comparison as unattainable. In this vein, the feedback's level precision could play an important role in the perception of individual goals as unattainable (Hannan, Krishnan & Newman, 2008). Therefore, further research it is needed in order to understand the effect of inter-group RPF on performance.

Finally, related to my third study I note the following limitations. First, in the design of the experiment I assumed that employees observe their peers perfectly. However in practice, employees only are able to imperfectly observe others. A second limitation is the sample size, which could reduce the power of my study. Thus, future research could replicate this experiment with a bigger sample. Third, the fairness perception in this

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study is based on how individuals perceive the wage chosen by their supervisor. However, individual fairness perception may be based on interpersonal relationship also. Future research could analyze the effect of fairness perception based on interpersonal relationship. Finally, in this study I focus only in the relationship between the potential whistleblower and the supervisor. However, it could be interesting analyze also how influence in whistleblowing decision: i) how fair the supervisor is with the employee who engaged in the misconduct; and ii) how the relationship is between the potential whistleblower and his/her peer.

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## APPENDIX: Material for experimental studies

1. Support material Study I
  - A) Instructions given to the participants
  - B) Screens of Z-tree Software
2. Support material Study II
  - A) Instructions given to the participants
  - B) Screens of Z-tree Software
3. Support material Study II
  - A) Instructions given to the participants
  - B) Screens of Z-tree Software

### 1. Support material Study I

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#### *A) Instructions given to the participants*

Please read the following instructions in the next 5 minutes. If you have any doubts, ask the people responsible for the activity.

**TASK:** The task consists of answering multiple-choice questions. The set of questions is composed of a wide variety of categories such as math, language, questions of logic and general knowledge.

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- There is a maximum of 75 questions to be answered.
- You start at question 1 and move to the next question by clicking the OK button.
- You cannot go back.
- Each question has 4 possible answers, of which only one is correct.
- You can also choose not to answer a question and directly move to the next question.
- For each question, you have exactly 20 seconds to provide your answer. After these 20 seconds you automatically go to the next question, even if you did not yet provide an answer.
- You have a total of 10 minutes to complete the task. After these 10 minutes are over, the task finishes automatically, even if you did not yet answer all 75 questions.
- After the task is finished, the computer calculates the number of correct answers.

**PAYOFF:** The reward you receive will depend on the results of the work done in this activity.

**PROCEDURE:** You must answer the most questions in the given time. After the task is complete, the computer calculates the number of correct answers you have obtained. Then you should send a message to the central computer to report the number of correct answers. This central computer will calculate your final payment and send a message to the computer that you occupy informing you of the reward you receive for participating in this activity. After you know about your reward, you will be asked to fill in a questionnaire.

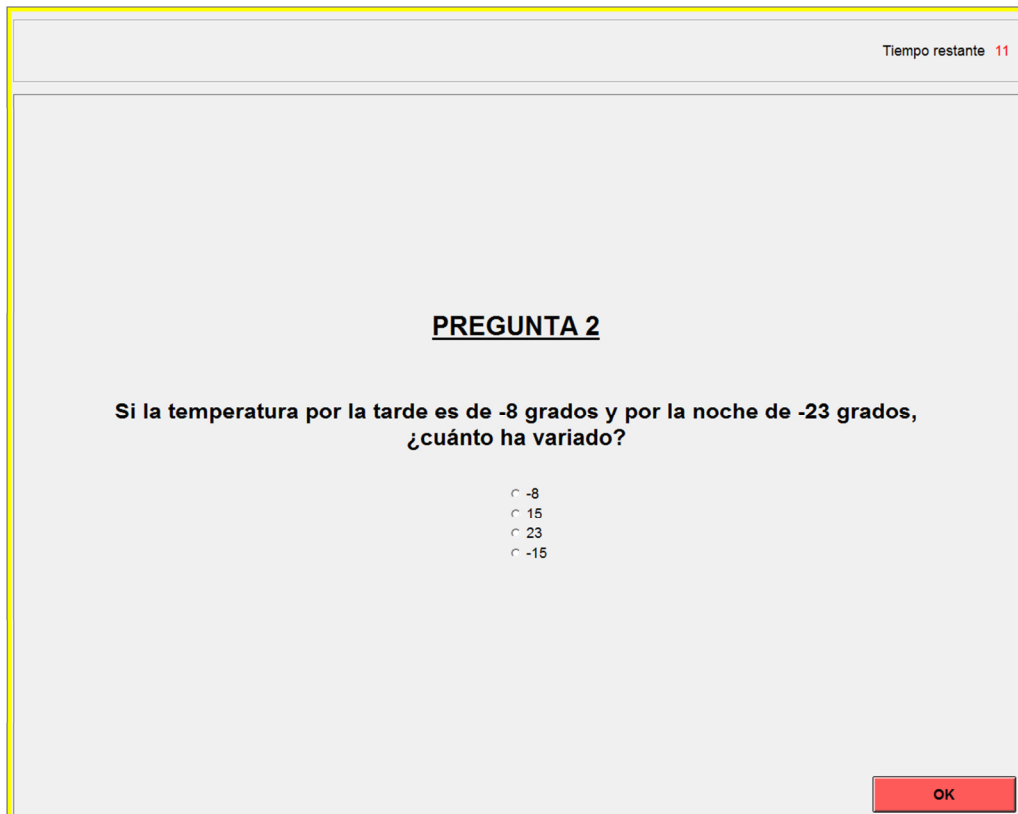
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The score you get will not be known by other participants. The researchers responsible for this activity or any other person cannot, addition, join the responses to any particular individual, due to the fact that you will be identified by a code and not by your name.

#### ***B) Screens of Z-tree Software***

***Example of question that participants had to answer:***



The screenshot shows a software window with a light gray background. In the top right corner, there is a label "Tiempo restante" followed by the number "11" in red. In the center of the window, the text "PREGUNTA 2" is displayed in bold and underlined. Below this, a question is posed: "Si la temperatura por la tarde es de -8 grados y por la noche de -23 grados, ¿cuánto ha variado?". Underneath the question, there are four radio button options: "-8", "15", "23", and "-15". In the bottom right corner of the window, there is a red rectangular button with the text "OK" in white.

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***Screen for decision about reporting performance:***

**Recuerda que tú recompensa depende del número que comuniques en esta pantalla, independientemente del número real de preguntas acertadas**

¿Cuántas preguntas has acertado?

No será conocida por otros participante ni la puntuación real que obtengas ni la puntuación que comuniques en esta pantalla. Además, los investigadores responsables de esta actividad ni ninguna otra persona podrán unir las respuestas obtenidas a ningún individuo concreto, ya que serás identificado por un código y no por tu nombre.

OK

## **2. Support material Study II**

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***A) Instructions given to the participants***

In this activity, you will belong to a team, which will be formed by three people. Team members will be chosen randomly by the computer. You will not be able to know who belongs to your team. The team aim is to achieve the

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highest possible production. The production of the team will be determined by the addition of individual productions of each team member.

**Example:**

MEMBER A PRODUCTION	3
MEMBER B PRODUCTION	6
MEMBER C PRODUCTION	1
<b>TEAM PRODUCTION</b>	<b>10</b>

**TASK DESCRIPTION:**

The task in this activity will be **the same for all participants**. This task consists in solving multiplication problems for **9 independent rounds**. In each round, you will have **6 multiplication problems**. For each problem, **5 possible answers** will be provided. You will have to choose the answer which you think it is correct. It is possible to pass to the next round even when all problems have not been solved.

In this activity, it is not allowed to use mobile phone or calculator.

**Solving multiplication problems accurately and quickly requires not only mechanical skills, but also general problem-solving ability.**

To perform this task you will be allotted **5 minutes (300 seconds)** per round. You can know the time by a clock which will be in the upper right part of your screen in each round.



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**Your team aim is to solve the maximum number of problems** in the given time. That is, **your aim** will be to maximize the production of your team.

After **each round**, you will receive information about how many **problems you have solved correctly** in the **current round** and **cumulatively**.

**Every three rounds** you will receive information about your team production and profit. Specifically, you will receive information about the benefit and the number of problems solved correctly by you and by your teammates. Also, you will know the profit and the number of problems solved correctly by your team in total in these rounds.<sup>4</sup>

In addition, **every three rounds** you will receive information about your team production and profit, as well as the rest of teams which participate in this activity. That is, you will know how many **problems your team has solved correctly and your team profit in comparison with the rest of teams** which participate in this activity.<sup>5</sup>

**Multiplication problem example:**

21 x 300

- a) 6.300      b) 6.310      c) 6.320      d) 6.344      e) 6.324

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<sup>4</sup> This paragraph is only included in the instructions of the condition in which intra-group RPF is present.

<sup>5</sup> This paragraph is only included in the instructions of the condition in which inter-group RPF is present.

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**PAYOFF:**

Your reward in this activity will depend on both the number of problems solved correctly by you as your team.

In this activity, all monetary figures will be expressed in LECU ("Lab Experimental Currency Unit"), an experimental currency used in this lab (100 LECUS = 1 EURO).

Your team profit will be compounded by a fix part and a variable part which will depend on the results achieved by your team. Your team will receive a **fix income of 1500 LECUS** only for participating in this activity (that is, only for participating, each team member will receive 500 LECUS). In addition, the team profit will be increased proportionally to the number of problems solved correctly by your team members. Specifically, your team will obtain **30 LECUS** for each multiplication problem solved correctly by your team members. The **total team profit** (fix part + proportional part to the problems solved by team members) **will be divided in equal parts** between each team member, **regardless the number of problems solved correctly by each one of them.**

**Each team member** will have a **production cost**, which will be **proportional to the number of problems solved** correctly by him/her. Specifically, each team member will have a cost of **10 LECUS** for each multiplication problem solved correctly.

- **TEAM PROFIT= 1500 + (30 x (problems solved by member A + problems solved by member B + problems solved by member C))**
- **PRODUCTION COST OF MEMBER i = 10 x problems solved by member i**
- **MEMBER i BENEFIT = (TEAM PROFIT / 3) - PRODUCTION COST OF MEMBER i**

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**Example:**

**Problems solved by the team = 10**

**Problems solved by member A = 4**

**Problems solved by member B = 6**

**Problems solved by member A = 0**

**TEAM PROFIT =  $1500 + (30 \times (4 + 6 + 0)) = 1800$  LECUS**

**MEMBER A BENEFIT =  $(1800 / 3) - (10 \times 4) = 560$  LECUS**

**MEMBER B BENEFIT =  $(1800 / 3) - (10 \times 6) = 540$  LECUS**

**MEMBER C BENEFIT =  $(1800 / 3) - (10 \times 0) = 600$  LECUS**

***B) Screens of Z-tree Software***

***Task screen***

RONDA 1		Tiempo restante 297
<p style="text-align: center;"><b>PULSA OK PARA QUE TUS RESPUESTAS SEAN CONTABILIZADAS</b></p> <p>1.) <math>33 \times 214</math></p> <p>a) 6.632    b) 7.062    c) 7.194    d) 7.292    e) 7.414</p> <div style="text-align: center;"><input type="checkbox"/></div> <div style="text-align: right; margin-top: 10px;"><input type="button" value="OK"/></div>	<p style="text-align: center;"><b>PULSA OK PARA QUE TUS RESPUESTAS SEAN CONTABILIZADAS</b></p> <p>4.) <math>311 \times 714</math></p> <p>a) 211.154    b) 214.124    c) 215.054    d) 220.424    e) 222.054</p> <div style="text-align: center;"><input type="checkbox"/></div> <div style="text-align: right; margin-top: 10px;"><input type="button" value="OK"/></div>	
<p>2.) <math>33 \times 22</math></p> <p>a) 656    b) 704    c) 726    d) 744    e) 882</p> <div style="text-align: center;"><input type="checkbox"/></div> <div style="text-align: right; margin-top: 10px;"><input type="button" value="OK"/></div>	<p>5.) <math>688 \times 886</math></p> <p>a) 609.568    b) 611.128    c) 619.328    d) 622.728    e) 628.768</p> <div style="text-align: center;"><input type="checkbox"/></div> <div style="text-align: right; margin-top: 10px;"><input type="button" value="OK"/></div>	
<p>3.) <math>41 \times 11</math></p> <p>a) 399    b) 401    c) 427    d) 443    e) 451</p> <div style="text-align: center;"><input type="checkbox"/></div> <div style="text-align: right; margin-top: 10px;"><input type="button" value="OK"/></div>	<p>6.) <math>34 \times 187</math></p> <p>a) 6.358    b) 6.424    c) 6.538    d) 6.764    e) 6.828</p> <div style="text-align: center;"><input type="checkbox"/></div> <div style="text-align: right; margin-top: 10px;"><input type="button" value="OK"/></div>	
<div style="border: 1px solid red; padding: 2px 10px; color: white; background-color: red; display: inline-block;"><b>PASAR A LA SIGUIENTE RONDA</b></div>		

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#### *Screen of Intra-group RPF*

En la siguiente tabla puedes observar el número de problemas resueltos correctamente junto con el beneficio (en LECUS) de **cada uno de los miembros** de tu equipo de producción durante las **tres rondas anteriores**:

TU EQUIPO	PROBLEMAS RESUELTOS CORRECTAMENTE (RONDAS 4, 5 Y 6)	PROBLEMAS RESUELTOS CORRECTAMENTE (TOTAL 6 RONDAS)
MIEMBRO A (TÚ)	0 (BENEFICIO = 30 LECUS)	0 (BENEFICIO = 590 LECUS)
MIEMBRO B	0 (BENEFICIO = 30 LECUS)	2 (BENEFICIO = 570 LECUS)
MIEMBRO C	3 (BENEFICIO = 0 LECUS)	7 (BENEFICIO = 520 LECUS)
EQUIPO	3 (INGRESOS = 90 LECUS)	9 (INGRESOS = 1770 LECUS)

Por favor, pulsa el botón **CONTINUAR** para pasar a la siguiente ronda

CONTINUAR

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#### *Screen of Inter-group RPF*

En la siguiente tabla puedes observar el número de problemas resueltos correctamente junto con el beneficio (en LECUS) de **cada uno de los equipos de producción** que participan en esta sesión durante las **tres rondas anteriores**:

COMPARATIVA ENTRE EQUIPOS	PROBLEMAS RESUELTOS CORRECTAMENTE (RONDAS 4, 5 Y 6)	PROBLEMAS RESUELTOS CORRECTAMENTE (TOTAL 6 RONDAS)
EQUIPO BLANCO	1 (INGRESOS = 30 LECUS)	7 (INGRESOS = 1710 LECUS)
EQUIPO NEGRO	4 (INGRESOS = 120 LECUS)	6 (INGRESOS = 1680 LECUS)
EQUIPO AZUL	2 (INGRESOS = 60 LECUS)	4 (INGRESOS = 1620 LECUS)
EQUIPO AMARILLO	1 (INGRESOS = 30 LECUS)	1 (INGRESOS = 1530 LECUS)
EQUIPO NARANJA (TU EQUIPO)	2 (INGRESOS = 60 LECUS)	2 (INGRESOS = 1560 LECUS)
EQUIPO MORADO	0 (INGRESOS = 0 LECUS)	2 (INGRESOS = 1560 LECUS)

Por favor, pulsa el botón **CONTINUAR** para pasar a la siguiente ronda

**CONTINUAR**

### 3. Support material Study III

#### *A) Instructions given to the participants*

In this activity, you belong to a **three people team**. Specifically, **two** team members will play the role of **employee** and another one will play the role of **supervisor**. Team members and their roles will be chosen randomly by the computer. It will not be able to know who belongs to your team. This activity is completely **anonymous**, we will never be able to link the

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decision made to a concrete individual. You will be identified by a code which matches with the position in which you are sitting rather than by your name.

Each participant will have **the same role** during all activity (8 periods). However, in each period the team members will change. The team members will be matched again randomly by the computer. That is, **your teammates will change** in each period.

The team aim is to obtain the **maximum possible performance** in each period. Team performance will be determined by the performance of one team member who plays the role of employee. Only one of the employees will have to perform a task and his/her result in this task will determinate the team performance.

*In each period, you will receive information about your team performance and about the team performance of other teams which participate in this activity. That is, in each period you will know how many points your team has obtained in comparison with the other teams which participate in the activity.<sup>6</sup>*

#### **Instructions for employees A**

In this activity, you will play the role of **employee (EMPLOYEE A)**. Your team is composed by two people more. One of them will play the role of **SUPERVISOR** and another one will play also the role of employee **(EMPLOYEE B)**.

Your task in this activity consists of a screen with several **sliders**. Each slider is **initially positioned at 0** and can be moved as far as 100. Each

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<sup>6</sup> This paragraph is only included in the instructions of the condition in which inter-group RPF is present.

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slider has a number to its right showing its current position. **Use your mouse to move the slider.** You can readjust the position of each slider as many times as you wish. **Your team will receive a point for each slider that you position at exactly 50.** In order to perform this task, you will be allotted **2 minutes (120 seconds)** per period. You can know the time by a clock which you can see in the upper right part of your screen in each period. **The team aim is to meet the maximum points in the task in each period. Thus, your aim will be to maximize your team performance.**

After the task ends up, you will receive information about the number of points that you have obtained. After this, **you have to communicate how many points you obtained.** Your rewards will depend on the number of points that you report. **Note that the computer will not check whether your reporting matches the actual points that you obtained.** This only will happen if the **EMPLOYEE B** decides that you must be revised. Thus, **your team performance will be the number of points that you report or your actual performance in the case that EMPLOYEE B decide that you must be revised.**

**EMPLOYEE B** will observe both your actual points obtained as your reported points. When you report a number of points higher than your actual points, **EMPLOYEE B** will have the opportunity to decide that you will be revised. If this happens, you will be rewarded by your actual points (not by your reported points) and you will be fined. However, **EMPLOYEE B will not receive any reward for deciding that you will be revised.** That is, **EMPLOYEE B** reward does not depend on his/her decision about if you have to be revised or not. **His/her rewards will be the same regardless his/her decision.**

Therefore, your reward will depend on your result in the task or the number of points that you report and on the **EMPLOYEE B** decision.

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Specifically, in each period you will receive a **fix reward (1100 LECUS)** and a **variable reward** which depends on the number of points that you have reported or you actually have obtained (depending on the decision of EMPLOYEE B). Specifically, your variable reward will be determined by:

- **If EMPLOYEE B decides that you do not have to be revised:  $10 \times$  reported points**
- **If EMPLOYEE B decides that you have to be revised:  $10 \times$  actual points - 800**

**IMPORTANT! YOUR FINAL PAYOFF WILL BE DETERMINED BY THE REWARD OBTAINED IN ONE OF THE 8 PERIODS. THIS REWARD WILL BE CHOSEN RANDOMLY BY THE COMPUTER**

**Examples:**

**1. Assume that:**

- **You obtain 20 points, but you decide to report that your result was 40 points.**
- **EMPLOYEE B decides that you will be not revised**

Therefore, your reward will be:  $1100$  (fix reward) +  $10 \times 40$  (variable reward) =  $1500$  LECUS

**2. Assume that:**

- **You obtain 20 points, but you decide to report that your result was 40 points.**
- **EMPLOYEE B decides that you will be revised**

Therefore, your reward will be:  $1100$  (fix reward) +  $10 \times 20 - 800$  (variable reward) =  $500$  LECUS



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**Instructions for employees B**

In this activity you will play the role of **employee (EMPLOYEE B)**. Your team is composed by two people more. One of them will play the role of **SUPERVISOR** and another one will play also the role of employee **(EMPLOYEE A)**.

**EMPLOYEE A** will perform a task. The result of this task will determine the team performance. This employee will communicate his/her result and he/she will be rewarded by this report. **Your team performance will be the result reported by EMPLOYEE A or the actual result of EMPLOYEE A if you decide that EMPLOYEE A must be revised.**<sup>7</sup>

You will observe both the **actual result obtained by EMPLOYEE A** as the **reported result**. If the **EMPLOYEE A** communicates that he/she obtained **more points than he/she actually obtained**, you will have the opportunity to ask that **EMPLOYEE A** will be revised. If you decide this, **EMPLOYEE A** will be rewarded by his/her actual result (not by the reported result) and he/she will be fined. Thus, your task in this activity is to decide whether **EMPLOYEE A must be revised or not**.

**Your reward** in each period will be determined by **YOUR SUPERVISOR**. Your supervisor will chose a fixed wage for you in each period.

Your **SUPERVISOR** will choose a wage which will range between **650 LECUS** and **1450 LECUS**. Thus, the minimum wage that you will receive will be **650 LECUS** and the maximum **1450 LECUS**. Your **SUPERVISOR** will choose a wage between these two amounts.

Your **SUPERVISOR** reward in each period will be determined by the **EMPLOYEE A** results, your wage and the **EMPLOYEE A** wage. Specifically,

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<sup>7</sup> This sentence is only included in the instructions of the condition in which inter-group RPF is present.

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**SUPERVISOR** will receive a **fix reward** and a **variable reward**, which will depends on the team performance. In addition, the **SUPERVISOR** reward will be **reduced by your wage and by the EMPLOYEE A wage**.

**IMPORTANT! YOUR FINAL PAYOFF WILL BE DETERMINED BY THE REWARD OBTAINED IN ONE OF THE 8 PERIODS. THIS REWARD WILL BE CHOSEN RANDOMLY BY THE COMPUTER**

**Examples:**

**1. Assume that:**

- **Your SUPERVISOR chose a wage for you of 650 LECUS.**
- **EMPLOYEE A obtain 20 points in the task, but decides to report that he/she obtained 40 points**
- **You decides that EMPLOYEE A will be revised**

Therefore you reward will be: 650 LECUS

Your SUPERVISOR reward will be:  $3050 \text{ (fix reward)} - 650 \text{ (your wage)} - (1100 + (10 \times 20 - 800) \text{ (EMPLOYEE A wage)} + 15 \times 20 \text{ (variable reward)}) = 2200 \text{ LECUS}$

**2. Assume that:**

- **Your SUPERVISOR chose a wage for you of 1450 LECUS.**
- **EMPLOYEE A obtain 20 points in the task, but decides to report that he/she obtained 40 points**
- **You decides that EMPLOYEE A will not be revised**

Therefore you reward will be: 1450 LECUS

Your SUPERVISOR reward will be:  $3050 \text{ (fix reward)} - 1450 \text{ (your wage)} - (1100 + (10 \times 40) \text{ (EMPLOYEE A wage)} + 15 \times 20 \text{ (variable reward)}) = 400 \text{ LECUS}$

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**Instructions for supervisors**

In this activity, you will play the role of **SUPERVISOR**. Your team is composed by two people more, which will play the role of employees. One of these employees (**EMPLOYEE A**) will perform a task and **his/her result** in this task will determine your **team performance**. This employee will report the points that he/she obtained in the task and he/she will be rewarded by these points.

The other employee (**EMPLOYEE B**) will observe both the actual **points obtained by EMPLOYEE A** as the **reported points**. If **EMPLOYEE A** report that he obtained **more points that he actually obtained**, **EMPLOYEE B** will have the opportunity to ask that **EMPLOYEE A will be revised**. If this happens, **EMPLOYEE A** will be rewarded by his/her **actual result** (not by the reported result) and he/she **will be fined**.

Your task in this activity will **be to choose the wage for EMPLOYEE B**. That is, you will have to decide which will be the wage for **EMPLOYEE B** in each period. You have to decide a wage for the **EMPLOYEE B** which range between **650 LECUS** and **1450 LECUS**. Therefore, the minimum wage that you can choose for **EMPLOYEE B** is **650 LECUS** and the maximum **1450 LECUS**. That is, you have to choose a wage between these two amounts.

**Your reward** in each period will be determined by the **results of EMPLOYEE A** and **both employees' wages**.

In each period, you will receive a **fix reward (3050 LECUS)** and a **reward which will depend on your team performance (15 points for each point obtained)**. On the other hand, as supervisor of your team, you must pay the wages of your team employees.

As you read previously, the **EMPLOYEE B wage will be chosen by you** (between 650 LECUS and 1450 LECUS).

**APPENDIX**  
**Material for experimental studies**

On the other hand, **EMPLOYEE A wage** will be a **fix reward (1100 LECUS)** and a **variable reward** which depends on the points that **EMPLOYEE A** communicates that he/she has obtained or on the points actually obtained whether the **EMPLOYEE B** decides that **EMPLOYEE A** will be revised. Specifically, the variable reward of **EMPLOYEE A** will be determined in the following way:

- **If EMPLOYEE B decides that EMPLOYEE A will not be revised:  
10 x reported points**
- **If EMPLOYEE B decides that EMPLOYEE A will be revised: 10 x  
actual points – 800**

**IMPORTANT! YOUR FINAL PAYOFF WILL BE DETERMINED BY THE  
REWARD OBTAINED IN ONE OF THE 8 PERIODS. THIS REWARD WILL  
BE CHOSEN RANDOMLY BY THE COMPUTER**

**Examples:**

- 1. Assume that:**
  - **You choose a wage for EMPLOYEE B of 650 LECUS.**
  - **EMPLOYEE A obtain 20 points in the task, but decides to report that he/she obtained 40 points**
  - **EMPLOYEE B decides that EMPLOYEE A will be revised**

Therefore your reward will be:  $3050 \text{ (fix reward)} - 650 \text{ (your wage)} - (1100 + (10 \times 20 - 800) \text{ (EMPLOYEE A wage)} + 15 \times 20 \text{ (variable reward)}) = 2200 \text{ LECUS}$

- 2. Assume that:**
  - **You choose a wage for EMPLOYEE B of 1450 LECUS.**
  - **EMPLOYEE A obtain 20 points in the task, but decides to report that he/she obtained 40 points**
  - **EMPLOYEE B decides that EMPLOYEE A will not be revised**

Therefore your reward will be:  $3050 \text{ (fix reward)} - 1450 \text{ (EMPLOYEE B wage)} - (1100 + (10 \times 40) \text{ (EMPLOYEE A wage)} + 15 \times 20 \text{ (variable reward)}) = 400 \text{ LECUS}$

**APPENDIX**  
**Material for experimental studies**

***B) Screens of Z-tree Software***

***Task screen***

Período 1 de 8	Tiempo restante 114
Actualmente, tu puntuación es de: 0	
<div style="display: flex; flex-wrap: wrap;"><div style="width: 33%;"><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div></div><div style="width: 33%;"><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div></div><div style="width: 33%;"><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div><div><div></div><div>0</div></div></div></div>	

**APPENDIX**  
**Material for experimental studies**

***Screen of decision about wage***

Por favor selecciona cuál será el salario del EMPLEADO B en este periodo. Recuerda que este salario tiene que oscilar entre 650 LECUS y 1450 LECUS

SALARIO PARA EL EMPLEADO B

OK

**APPENDIX**  
**Material for experimental studies**

***Screen of decision about peer reporting***

El EMPLEADO A de tu equipo ha obtenido 0 puntos, pero ha comunicado que ha obtenido 29 puntos.  
Por favor, indica si quieres que el EMPLEADO A sea revisado:

**APPENDIX**  
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***Screen of Inter-group RPF***

<b>En esta tabla puedes ver el rendimiento de tu equipo y el rendimiento de los otros equipos que participan en la actividad</b>		
<b>1. EL MEJOR!!</b>	<b>EQUIPO NARANJA</b>	<b>29</b>
<b>2. SEGUNDO</b>	<b>EQUIPO AZUL</b>	<b>18</b>
<b>3. TERCERO</b>	<b>EQUIPO AMARILLO</b>	<b>10</b>
<b>3. TERCERO</b>	<b>EQUIPO MORADO</b>	<b>10</b>
<b>4. CUARTO</b>	<b>EQUIPO NEGRO</b>	<b>0</b>
<b>4. CUARTO</b>	<b>EQUIPO BLANCO</b>	<b>0</b>
<b>Recuerda que en este periodo formas parte del EQUIPO AZUL</b>		
<div style="border: 1px solid black; padding: 2px 10px; display: inline-block;"><b>CONTINUAR</b></div>		



**APPENDIX**  
**Material for experimental studies**

## CONFERENCES AND WORKSHOPS

The studies from this dissertation have been presented in the following conferences and workshops. I thank all the comments and feedback received from participants.

### **Honesty and Management Control System Design**

- *16<sup>th</sup> Workshop on Accounting and Management Control: "Memorial Raymond Konopka", February (2011), Madrid (Spain).*
- *6<sup>th</sup> Conference on Performance Measurement and Management Control, September (2011), Nice (France).*
- *XVI Congreso AECA, September (2011), Granada (Spain).*
- *35<sup>th</sup> EAA Annual Congress, May (2012), Ljubljana (Slovenia).*

### **Intra-group vs. Inter-group Relative Performance Feedback**

- *7<sup>th</sup> Conference on Performance Measurement and Management Control, September (2013), Barcelona (Spain).*
- *19<sup>th</sup> Workshop on Accounting and Management Control: "Memorial Raymond Konopka", January (2014), Burgos (Spain).*
- *37<sup>th</sup> EAA Annual Congress, May (2014), Tallinn (Estonia).*
- *XVI Encuentro ASEPUC, June (2014), Murcia (Spain).*

### **The effects of Perceived Fairness and Inter-group Relative Performance Feedback on Whistleblowing decisions**

- *FUR 2014 Conference, July (2014), Rotterdam (Netherlands).*
- *Internal Accounting Research Seminar held at Amsterdam Business School (University of Amsterdam), November (2014), Amsterdam (Netherlands).*
- *20<sup>th</sup> Workshop on Accounting and Management Control: "Memorial Raymond Konopka", January (2015), Segovia (Spain).*

## CONFERENCES AND WORKSHOPS

Furthermore, I have presented my PhD project in several doctoral colloquiums, such as:

- *Doctoral Colloquium, XV Encuentro ASEPUC, June (2012), Cádiz (Spain).*
- *Doctoral Colloquium, 19<sup>th</sup> Workshop on Accounting and Management Control: "Memorial Raymond Konopka", January (2014), Burgos (Spain).*
- *Doctoral Colloquium in Accounting, 30<sup>th</sup> Europea Accounting Association, May (2014), Tartu (Estonia).*

## RESUMEN EN ESPAÑOL (Summary in Spanish)

### A) Introducción

### B) Comportamientos disfuncionales en las organizaciones

### C) El diseño de los sistemas de control de gestión

### D) Preguntas de investigación y contribuciones

## Referencias

### A) Introduction

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Esta tesis analiza cómo el diseño de los sistemas de control de gestión influye en los comportamientos disfuncionales en las organizaciones. Con este fin, se han llevado a cabo tres estudios experimentales. En el primero, son contrastadas las hipótesis relacionadas con cómo la (des)honestidad a la hora de reportar los resultados es influenciada por la relación entre el diseño de los sistemas de control de gestión (sistema de creencias vs. sistema de fronteras) y la orientación cognitiva hacia el individualismo. El segundo estudio, se centra en analizar cómo la información sobre el rendimiento relativo (*relative performance feedback: RPF*) afecta al rendimiento individual. Por último, el tercer estudio analiza el efecto de la percepción de justicia de un individuo sobre su supervisor y de un sistema de información de rendimiento relativo de diferentes equipos (inter-group

RPF) en la decisión de un individuo de reportar las conductas disfuncionales de sus compañeros de trabajo.

Esta tesis combina teorías económicas con teorías psicológicas. Aquellos sistemas de control que son diseñados basándose en la premisa de que todos los individuos actúan oportunistamente para maximizar sus beneficios no son siempre óptimos (Hannan, 2005; Rankin, Schwartz & Young, 2008; Rigdon, 2009). La Teoría Económica tradicional asume que los individuos sólo son motivados por su propio interés y por la maximización de sus ganancias (Birnberg, 2011). Sin embargo, la literatura contable conductual subraya que los individuos no se comportan totalmente de manera egoísta, sino que ellos actúan conforme ciertas normas tales como la justicia, la equidad, la confianza, la honestidad o la disposición a cooperar (Birnberg, 2011). Por tanto, es necesario integrar la psicología en el marco contable para entender mejor cómo los individuos son motivados en las organizaciones a través de los sistemas de control de gestión.

## **B) Comportamientos disfuncionales en las organizaciones**

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En las organizaciones, los individuos deciden si actuar en favor de sus propios intereses o en favor del beneficio común de su grupo u organización (Probst, Carnevale & Triandis, 1999). En este sentido, los empleados pueden comportarse de manera disfuncional con el objeto de conseguir sus propios intereses. Los comportamientos disfuncionales pueden ser definidos como aquellos comportamientos que son llevados a cabo por un individuo o grupo de individuos que tienen consecuencias negativas para otro individuo, grupo o la propia organización (Griffin & Lopez, 2005).

## **RESUMEN EN ESPAÑOL (Summary in Spanish)**

Esta tesis examina los efectos del diseño de los sistemas de control de gestión en los comportamientos deshonestos, los cuales no sólo pueden tener consecuencias negativas para la organización, sino que también puede perjudicar a otros empleados o compañeros de equipo. Esta tesis se centra en el análisis de dos comportamientos deshonestos: (i) uno que tendrá consecuencias negativas para la organización (deshonestidad a la hora de reportar los resultados); y (ii) otro que además tiene consecuencias negativas para los compañeros de equipo (problema del polizón o free-riding).

Las preocupaciones sobre la honestidad en los informes gerenciales o a la hora de comunicar resultados han sido ampliamente reconocidas en la literatura contable (Birnberg, 2011; Mittendorf, 2006). En las organizaciones los individuos tienen información privada que pueden usar para su propio beneficio. Relacionado con esto, las teorías económicas sugieren que los individuos son deshonestos cuando obtienen beneficios porello (Gneezy, 2005; Rankin et al., 2008). Sin embargo, varios estudios han encontrado que las personas no son totalmente deshonestas como ha sido predicho por la teoría de la agencia (Evans, Hannan, Krishnan & Moser, 2001; Hannan, Rankin & Towry, 2006; Rankin et al., 2008). Una explicación para estos resultados es que los individuos no sólo tienen preferencias por los beneficios que ellos obtienen de su comportamiento deshonesto, sino también de su comportamiento honesto (Luft, 1997; Birnberg, 2011).

Por otro lado, el incremento de estructuras organizativas basadas en equipos (Kozolowski & Ilgen, 2006) ha aumentado el interés de los investigadores por los comportamientos disfuncionales en los equipos. El mero hecho de adoptar una estructura basada en equipos no lleva a una mejora del rendimiento. Por el contrario, estas estructuras pueden llevar a pérdidas de motivación y coordinación (Schnake, 1991; Wegge & Haslam, 2005), las cuales pueden tener como consecuencia la aparición de

## RESUMEN EN ESPAÑOL (Summary in Spanish)

comportamientos disfuncionales. La holgazanería social (*social loafing*) y el problema del polizón (*free-riding*) son dos de los principales comportamientos disfuncionales que tienen lugar en los equipos (Kidwell & Bennet, 1993; Schnake, 1991; Wegge & Haslam, 2005). Rowe (2004) establece que la holgazanería social surge cuando todos los miembros del equipo reducen sus contribuciones al rendimiento grupal en un mismo grado. Por otro lado, se considera que un individuo se está comportando como un polizón (*free-rider*) cuando se beneficia del rendimiento grupal sin contribuir a él (Rowe, 2004).

En la literatura contable, varios estudios se han centrado en los antecedentes de estos comportamientos disfuncionales y en cómo mitigarlos (ej. Hannan et al., 2006; Kidwell & Bennet, 1993; Maas & Van Rinsum, 2013; Rowe, 2004; Rowe, Birnberg & Shields, 2008). Sin embargo, poca investigación se ha centrado en analizar cómo los individuos se comportan cuando perciben o conocen que sus compañeros se están comportando de manera disfuncional (Mulvey & Klein, 1998; Tata, 2002). Extender la literatura en relación con esta cuestión es clave ya que los comportamientos de un individuo concreto pueden tener consecuencias importantes en los comportamientos de sus compañeros, tales como la honestidad (Gino, Ayal, Ariely, 2009) y el rendimiento individual (Schnake, 1991; Tata, 2002).

La percepción de que uno o varios miembros del equipo están contribuyendo al grupo menos de lo que ellos podrían tiene implicaciones significativas para el rendimiento del equipo (Tata, 2002). Cuando una persona conoce o percibe que su compañero de equipo se está comportando como un *free-rider*, puede decidir reducir sus esfuerzos para evitar ser explotado por su compañero de equipo (Kerr, 1983; Schnake, 1991). Este efecto es conocido en su terminología inglesa como el *sucker effect*. Por tanto, no sólo es importante analizar cómo el diseño de los sistemas de control de gestión influye en los comportamientos

disfuncionales, sino también cómo influye en los comportamientos de los individuos cuando ellos observan comportamientos disfuncionales por parte de sus compañeros.

Sin embargo, cuando los individuos observan el comportamiento disfuncional de otros empleados, los sistemas de control de gestión no sólo pueden influir en el rendimiento individual, sino también en otros comportamientos y decisiones, tales como la decisión sobre si informar o no de los comportamientos de sus compañeros (*peer reporting*). El *Peer reporting* genera diversas y conflictivas opiniones (Reuben & Stephenson, 2012). En la literatura, algunos estudios sugieren que existen ciertos motivos que pueden fomentar que las personas informen de los comportamientos deshonestos de sus compañeros (Fehr & Gächter, 2000; Reuben & Stephenson, 2012). Sin embargo, existen otros estudios que muestran que los empleados son generalmente reacios a comunicar tales conductas (Robertson, Stefaniak & Crutis, 2011). Por tanto, se hace necesario ampliar la investigación relacionada con esta cuestión con el objetivo de entender qué factores afectan y cómo a esta decisión.

### **C) El diseño de los sistemas de control de gestión**

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Los sistemas de control de gestión son capaces de incentivar y motivar a los individuos a comportarse en pro de los intereses de la organización. (Henri, 2006; Naranjo-Gil & Hartmann, 2007). Por tanto, un adecuado diseño de los sistemas de control de gestión podrían reducir los comportamientos disfuncionales en las organizaciones. En este sentido, es importante entender cómo diferentes diseños de los sistemas de control de gestión influyen en los comportamientos disfuncionales en las organizaciones.



## **RESUMEN EN ESPAÑOL** **(Summary in Spanish)**

Esta tesis, basándose en el marco de las palancas de control de Simons (1995), analiza cómo el diseño de los sistemas de control de gestión afecta a los comportamientos disfuncionales. Además, basándose en la investigación sobre la información del rendimiento relativo, esta tesis examina cómo los individuos reaccionan a los comportamientos disfuncionales de sus compañeros.

En esta tesis, se intenta extender el marco de Simons a los comportamientos individuales en las organizaciones. Simons (1995) define cuatro tipos de sistemas de control de gestión: sistema de creencias, sistema de fronteras, sistema de control diagnóstico y sistema de control interactivo. Esta tesis se centra en los sistemas de control de gestión relacionados con el diseño: sistema de creencias y sistema de fronteras. El sistema de creencias es utilizado para definir, comunicar y reforzar los valores, propósitos y dirección de la organización (Simons, 1995). Por otro lado, el sistema de fronteras comunica las acciones que tiene que ser evitadas (Simons, 1995). Es decir, establece límites explícitos y reglas que deben ser respetadas (Simons, 1995). Ambos sistemas facilitan que los individuos comparen los comportamientos deseados con los suyos propios. Este hecho motiva a los individuos a reducir sus comportamientos disfuncionales (Mazar, Amir & Ariely, 2008). Por tanto, los sistemas de creencias y de fronteras podrían ser utilizados para disminuir los comportamientos no deseables (Widener, 2007). Sin embargo, estos sistemas de control no funcionan de igual forma en todos los individuos (Scott, 2011), ya que las personas tienen diferentes respuestas emocionales y orientaciones cognitivas hacia el control (Drach-Zahavy, 2004; Tessier & Otley, 2012).

Por otro lado, la investigación relativa a la información sobre el rendimiento relativo se ha centrado en analizar los efectos que proporcionar esta información tiene en el rendimiento. Para este fin, la mayoría de los estudios se han centrado principalmente en la teoría de

## **RESUMEN EN ESPAÑOL** **(Summary in Spanish)**

comparación social. Esta teoría sugiere que la relación entre la información sobre el rendimiento relativo tendrá un efecto positivo en el rendimiento (Hannan, Krishnan & Newman, 2008; Taftkov, 2013). Sin embargo, podrían existir factores que moderarán esta relación. En este sentido, Hannan et al. (2008) encontró que la información sobre el rendimiento relativo no siempre influye de forma positiva en el rendimiento, sino que va a depender del sistema de incentivos utilizado. La información sobre el rendimiento relativo fomenta la comparación social (Taftkov, 2013) y el efecto que dicha comparación social tiene en el rendimiento individual puede depender de cómo los individuos son recompensados (Hannan et al., 2008; Taftkov, 2013). Investigaciones previas han encontrado que la información sobre el rendimiento relativo influye positivamente en el rendimiento cuando los individuos son recompensados por un salario fijo o por un sistema basado en el rendimiento individual. Sin embargo, se han encontrado evidencias de que dicha información influye negativamente cuando los individuos son recompensados por un sistema de incentivos basado en la competición y la información proporcionada sobre el rendimiento relativo es suficientemente precisa (Hannan et al., 2008). Por tanto, es importante y necesaria una mayor investigación sobre cuando la información sobre el rendimiento relativo tendrá un efecto positivo en el rendimiento.

Además, atendiendo a que la información sobre el rendimiento relativo fomenta la competición (Garcia & Tor, 2007; Taftkov, 2013), dicha información podría afectar a otros comportamientos diferentes al rendimiento individual, que afectaran a cómo los individuos se ven a ellos mismos en comparación con otros. Motivados por la competición, la decisión de un individuo sobre si cubrir o no a su compañero puede depender de si esta decisión influye en la obtención de comparaciones favorables en relación con otros. Por lo que es importante ampliar la literatura contable en este aspecto.

## **D) Preguntas de investigación y contribuciones**

Esta tesis intenta responder a las siguientes preguntas de investigación:

- (1) ¿Cómo el diseño de los sistemas de control de gestión influye en los comportamientos disfuncionales?
- (2) ¿Cómo el diseño de los sistemas de control de gestión influye en los comportamientos de los individuos cuando observan que sus compañeros se están comportando de manera disfuncional?

Para responder a estas preguntas he llevado a cabo tres estudios. El primer estudio se centra en examinar cómo la (des)honestidad a la hora de reportar el rendimiento es influenciado por la relación entre el diseño de los sistemas de control de gestión (sistema de creencias vs. sistema de fronteras) y la orientación cognitiva hacia el individualismo. Los resultados de este estudio muestran que: (i) la orientación cognitiva individualista influye negativamente a la honestidad a la hora de reportar el rendimiento; y que (ii) esta relación es moderada por un sistema de control de fronteras. Los individualistas informarán menos honestamente de sus resultados cuando existe un sistema de fronteras en lugar de un sistema de creencias.

El segundo estudio analiza cómo la información sobre el rendimiento relativo afecta al rendimiento individual cuando los individuos trabajan en equipo y son recompensados por un sistema de incentivos grupal. Los resultados muestran que el efecto negativo que tiene proporcionar información sobre el rendimiento de otros miembros del equipo es mitigado cuando se proporciona además información sobre el rendimiento de los equipos.

Finalmente, el tercer estudio examina los efectos de la justicia percibida de un empleado sobre su supervisor y de la información sobre el rendimiento relativo de varios equipos en la decisión de reportar los comportamientos

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deshonestos de los compañeros. Los resultados sugieren que: (i) cuando es proporcionada información sobre el rendimiento de varios equipos, los individuos están menos dispuestos a comunicar los comportamientos deshonestos de sus compañeros; y que (ii) cuando los individuos perciben a sus supervisores como justos, ellos estarán menos dispuestos a reportar las conductas deshonestas de sus compañeros cuando se proporciona información relativa de los rendimientos de varios equipos.

Para contrastar las hipótesis planteadas en cada uno de los estudios, se llevaron a cabo tres experimentos (uno por cada estudio). Los experimentos son un mecanismo útil y adecuado para analizar las relaciones causales bajo condiciones puras y no contaminadas (Kerlinger & Lee, 2000). Los participantes de estos experimentos fueron estudiantes de la Universidad Pablo de Olavide en Sevilla (España). La elección de dichos participantes se debe al hecho de que no era necesaria ninguna habilidad específica ni tener experiencia previa para realizar las tareas diseñadas en cada uno de los experimentos.

Esta tesis contribuye a la literatura de contabilidad de gestión de varias formas. Primero, esta investigación extiende el marco de Simons (1995) a los comportamientos individuales en las organizaciones, más allá del control estratégico. En concreto, es mostrado cómo el diseño de los sistemas de control de gestión influye en la motivación de los empleados, pregunta que el marco de Simons deja sin respuesta (Adler & Chen, 2011). Hasta mi conocimiento, este es el primer estudio que analiza empíricamente el efecto de un sistema de creencias y un sistema de fronteras en comportamientos disfuncionales. Segundo, esta tesis contribuye a la demanda existente en la literatura contable sobre qué factores influyen en la honestidad y cómo sistemas de control diferentes a los convencionales sistemas de incentivos monetarios afectan al comportamiento deshonesto (Evans et al., 2001). Tercero, en línea con la reciente investigación, los resultados de esta tesis muestran que las

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personas no sólo valoran sus propios pagos materiales, sino que también son motivados por preferencias sociales.

Además, esta tesis extiende la investigación previa en contabilidad de gestión analizando no sólo cómo el diseño de los sistemas de control afecta a los comportamientos disfuncionales, sino además analizando cómo afectan a las reacciones de los individuos cuando ellos observan comportamientos disfuncionales llevados a cabo por sus compañeros. Por último, teniendo en cuenta que los sistemas de control de gestión son implementados en las organizaciones junto con otros sistemas de control o prácticas organizativas (Kelly & Tan, 2010), esta tesis contribuye a la literatura analizando el efecto interactivo de diferentes sistemas de control y prácticas organizativas.

Esta tesis tiene también implicaciones prácticas. Los resultados sugieren que las organizaciones deberían tener en cuenta la orientación cognitiva predominante de los individuos cuando diseñen los sistemas de control de gestión. Un sistema de control de gestión que impone límites coactivos puede fomentar sentimientos de resistencia psicológica (*psychological reactance*) en individuos con una orientación cognitiva hacia el individualismo. Además, los resultados de esta tesis muestran que diferentes diseños de la información influyen en las decisiones de los individuos sobre: (i) si seguir el comportamiento del compañero, comportándose por tanto de forma disfuncional también; y sobre (ii) si informar a los superiores sobre los comportamientos deshonestos de sus compañeros.

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